CURTIS'S
BOTANICAL MAGAZINE,

COMPRISING THE

Plants of the Royal Gardens of Kew,

AND

OF OTHER BOTANICAL ESTABLISHMENTS IN GREAT BRITAIN;

WITH SUITABLE DESCRIPTIONS;

BY

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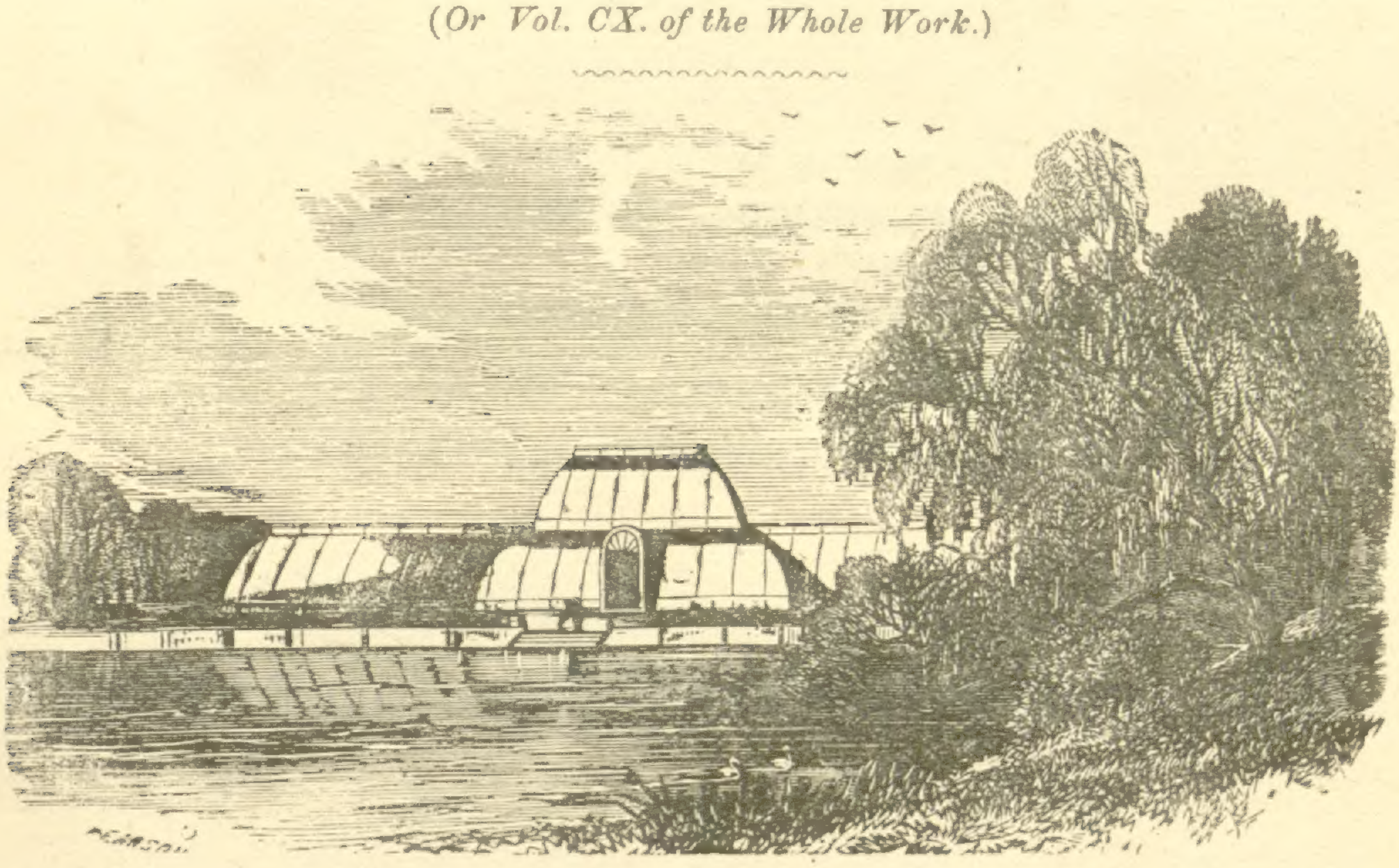
VOL. XL.
OF THE THIRD SERIES.
(*Or Vol. CX. of the Whole Work.*)



"There sprang the violet all new,
And fresh pervinke rich of hew,
And flowres yellow, white and rede,
Such plenty grew there never in mede."—CHAUCER.

LONDON:
L. REEVE & CO., 5, HENRIETTA STREET, COVENT GARDEN.
1884.

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Mo. Bot. Garden,
1897.

PRINTED BY
GILBERT AND RIVINGTON, LIMITED,
ST. JOHN'S SQUARE.

TO

JOHN BALL, ESQ., M.A., F.R.S., F.L.S.,

&c., &c.

My dear Ball,

As one who has laid both Botanists and Horticulturists under lasting obligations by your travels and your writings, and especially by your published works on the vegetation of the Alps and of the Atlas, I hope you will accept the dedication of a volume of the Botanical Magazine.

Allow me at the same time to record my grateful sense of the interest you have always shown in the establishment of Kew, and of that personal friendship which has known no break during many years of active scientific intercourse, and many months of foreign travel.

Believe me, my dear Ball,

Most sincerely yours,

JOS. D. HOOKER.

Royal Gardens, Kew,

December 1*st*, 1884.

M.S. del, J.N. Fitch, lith.

Vincent Brooks Day & Son Imp

TAB. 6731.

DECAISNEA INSIGNIS.

Native of the Eastern Himalaya.

Nat. Ord. BERBERIDEÆ.—Tribe LARDIZABALEÆ.

Genus DECAISNEA, *Hook. f. et Thoms.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 42.)

DECAISNEA *insignis*; frutex erectus glaberrimus polygamo-dioicius, caulibus strictis parum divisis ramis apices versus foliosis, foliis elongatis impari-pinnatis petiolo terete gracili, foliolis petiolulatis ovatis v. elliptico-lanceolatis acuminatis integerrimis subtus glaucis, racemis elongatis patentibus, floribus pendulis viridibus, sepalis 6 lanceolatis acuminatis, petalis 0, fl. ♂, staminibus 6 filamentis in columnam elongatam connatis, antheris adnatis connectivo in processum rostratum erectum producto, fl. ♀ carpellis 3 basi staminibus 6 imperfectis liberis stipatis, fructus carpellis 3 cylindraceis patenti-recurvis rugosis carnosis polyspermis.

D. insignis, *Hook. f. et Thoms. in Proc. Linn. Soc.* 1854, *et in Fl. Ind.* vol. i. p. 213; *Hook. f. Ill. Him. Pl.* t. 10, *et in Fl. Brit. Ind.* vol. i. p. 107.

SLACKIA insignis, *Griff. Itin. Notes*, 187 (n. 977).

The subject of the present plate is one of the most remarkable of Indian botanical discoveries, both in structure and appearance, and is further notable as yielding an edible fruit. With the habit of an Araliaceous plant, it exhibits the characters of the tribes *Berbereæ* and *Lardizabaleæ*, whilst differing from both in several important points. That its nearest affinity is with *Lardizabaleæ* is shown by its unisexual flowers, monadelphous stamens with anthers opening by longitudinal slits, its three carpels and many seeds; whilst it differs from all others of the tribe in its erect habit, racemose inflorescence, pinnate leaves, and from most of them in the placentation being sutural. Amongst *Berbereæ* the habit recalls the *Mahonia* section of *Berberis*, with this difference, that the wood of *Decaisnea* is singularly soft and brittle, and the leaves herbaceous and deciduous, both petiole and leaflets being jointed at the base.

Decaisnea is a native of the humid forests of Sikkim and Bhotan, at elevations of 7000 to 9000 feet above the sea; it was discovered in 1838 in the former country by Griffith,

who in his MS. Itinerary Notes proposed for it the name of *Slackia*, after an eminent microscopist. This name, however, Griffith did not himself publish for *Decaisnea* (his "Itinerary Notes" having been posthumously edited), and in 1845 he gave the same name to a genus of Palms, which he published in the "Calcutta Journal of Natural History" (vol. v. p. 468), and which was further described and figured in his posthumous "Palms of British India." The Palm genus *Slackia* has, however, been lately determined by me to be identical with *Iquanura* of Blume, and the question is, whether *Slackia* should not now be reverted to for *Decaisnea*. I think not; (1) because Griffith himself not only never published it, but abandoned it for that plant and gave it to another; (2) because if he had lived and published his Itinerary Notes, he would assuredly have expunged the name *Slackia* therefrom; and (3) because his whole description, "Frutex caulibus simplicibus robustis foliis pinnatis subtus glaucis carnosis, racemis pendulis, floribus e viridi luteis, perianth. acuminatiss.," is wholly insufficient to establish a genus upon, or without the aid of the number referring to his herbarium, to identify the plant by. Considering further that the name *Decaisnea* is that of a botanist whose essay on the tribe to which it belongs—the *Lardizabaleæ*—is a classical work, I have no hesitation in retaining it, and shall look out for another Indian genus whereby to commemorate Mr. Slack's services to microscopy. The figure here given is taken from a plant five feet high, growing in the Temperate House at Kew, raised by Mr. Max Leichtlin, of Baden (who presented the young plant to Kew), from seed sent by Mr. Gammie from Sikkim. It flowered in May of the present year for the first time, and proved to be a male plant.

Descr. *Trunk* or trunks, for sometimes several spring from the ground from a common root, six to ten feet high, as thick as the arm, very brittle; bark pale, covered with lenticels, pith very large; branches few, subterminal, erect. *Leaves* terminal on the branches, two to three feet long, horizontal; petiole slender, terete, jointed on the stem; leaflets many pairs, four to six inches long, petiolulate, ovate or elliptic acuminate, green above, glaucous beneath, thin (not fleshy as described by Griffith). *Racemes* terminal and axillary, a foot long, horizontal, many-flowered. *Flowers* drooping, green, one inch long, on slender pedicels as long

as themselves; bracts subulate, minute. *Perianth* campanulate; segments lanceolate, acuminate. MALE FLOWER: *stamens* six, filaments united into a cylindric column bearing the adnate two-celled anthers at the tip; anther-cells oblong, disconnected, bursting by dorsal slits, connective produced into a long erect subulate horn. FEMALE FLOWER: *carpels* three, erect, linear, cylindric, with discoid sessile stigmas, surrounded at the base by six subsessile abortive free anthers; ovules many, two-seriate on the ventral suture. *Ripe carpels* three, three to four inches long by one to one and a half in diameter, cylindric, spreading and recurved, golden yellow, fleshy, full of white sweet pulp; pericarp fleshy, with yellow juice, coarsely granulate externally. *Seeds* numerous, two-seriate, suborbicular or oblong, flattened, one-half to three-quarters of an inch in diameter; testa hard, brown, shining; embryo minute, in horny albumen.—*J. D. H.*

Fig. 1, Whole plant, *reduced;* 2, flowering (♂) branch; 3, portion of leaf; 4, bud scale; 5, staminal column; 6, anther; 7, carpels and abortive stamens of ♀; 8, fruit; 9, seed; 10, albumen and embryo; 11, embryo removed:—*all but figs.* 2, 3, 4, 8, and 9, *enlarged.* (Figures of female flower, seeds, and fruit, from Ill. Himal. Pl.)

M.S. del. J.N. Fitch, lith.

Vincent Brooks Day & Son Imp

Tab. 6732.

PRIMULA prolifera.

Native of the Eastern Himalaya, Khasia Mountains, and Java.

Nat. Ord. Primulaceæ.—Tribe Primuleæ.

Genus Primula, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 631.)

Primula *prolifera;* elata, inflorescentia farinosa, foliis elongato-obovatis obtusis denticulatis rugosis efarinosis glabris v. subtus puberulis, scapo gracili foliis multo longiore, floribus verticillatis verticillis superpositis multifloris, bracteis lanceolatis v. infimis elongatis, calycis tubo hemispherico lobis brevibus triangularibus v. subulatis, corollæ aureæ tubo calyce longiore ore annulato, limbi lobis obcordatis planiusculis, capsula globosa calyce inclusa.

P. prolifera, *Wall. in Asiat. Research.* vol. xiii. p. 372, t. 3, *et in Roxb. Fl. Ind. Ed. Carey and Wall.* vol. ii. p. 18; *Duby in DC. Prodr.* vol. viii. p. 34; *Don Prodr. Fl. Nep.* p. 81; *Zoll. in Nat. En. Gen. Arch.* vol. ii. p 8; *Zoll. et Morr. Syst. Veg.* p. 44; *Hook. f. Fl. Brit. Ind.* vol. iii. p. 489.

P. imperialis, *Jungh. in Tijdschr. Nat. Gesch.* vol. vii. p. 298; *Miquel Fl. Ind. Bat.* vol. ii. p. 1001.

Cankrienia chrysantha, *De Vriese in Jaarboek der Maatch. van Tuinbow,* 1850, p. 30 (*cum ic. in Flore des Serres,* vol. v. p. 50 *iterata*); *Plant. Jungh.* vol. i. p. 86.

The introduction into cultivation of this fine primrose had long been regarded as a desideratum; and it occurred in a very unexpected way, by the announcement from my friend, Isaac Anderson Henry, that he had a living plant of it in his garden, with the information that it was raised from seeds sent to him from a great elevation in the Sikkim Himalaya by Mr. Elwes. Now, seeing that the only Indian habitat for this plant previously known was the Khasia Mountains of E. Bengal, at an elevation of only 4000 to 6000 feet, I could (knowing his accuracy) only accept Mr. Anderson Henry's statement with wonder. Shortly afterwards, however, when revising some very imperfect specimens of Primulas collected in India, and which I had been unable satisfactorily to determine when describing the genus in the "Flora of British India," I encountered a solitary fruiting example of this plant gathered by myself in the Lachen valley, far in the interior of Sikkim, in the year 1849, at an elevation of 12,000 feet; and more recently I have received specimens collected at Jongri and Yakla, altitudes 13,000 and 16,000 feet, by Mr. Clarke, both in the interior of Sikkim, thus tending to confirm Mr. Anderson

Henry's history of his specimen. The latter he most kindly sent up for figuring in June last, and having planted it out in a border by a house-wall at Kew, it throve well, continuing to flower and mature a few seeds till August, when it was taken up and returned uninjured to its owner, with grateful acknowledgments. This then is a remarkable case of a plant occurring in remote and isolated areas, at great differences of elevation. In Java *P. prolifera* inhabits the tops of the loftiest mountains at 8000 to 9000 feet; and I can find no difference between the Javan and Indian plants, except that the bracts of the lower whorl of flowers become usually elongate and foliaceous in Java; a tendency to which I find in the Khasian specimens, but not in the same degree. The position of the stamens in the tube of the corolla, and the length of the latter, both vary greatly.

The genus *Cankrienia* was founded by De Vriese on a mistaken view of the fruit, and is now abandoned. The foliage is by far the largest of any *Primula*, that of both Khasian and Javan examples attaining eighteen inches in length and five in breadth; the Sikkim ones are always smaller.

Descr. *Rootstock* stout; leaf-buds mealy, with straw-coloured powder, like that of the inflorescence. *Leaves* six to sixteen inches long by one to three broad, narrowly obovate-oblong, contracted into a broad or rather slender but winged petiole, obtuse, wrinkled, irregularly toothed or nearly entire, glabrous or puberulous beneath. *Scape* six to twenty inches high, sometimes as thick as a goose-quill, strict, erect, with two to six superposed rather distant whorls of faintly sweet-scented flowers; bracts small, lanceolate, or of the lowest flowers elongate linear-lanceolate spreading and recurved; pedicels one-third to one inch long. *Calyx* hemispheric; lobes triangular, or subulate in small forms. *Corolla* pale golden yellow, tube much longer than the calyx, a quarter to half an inch long, cylindric; limbs three-quarters of an inch in diameter; lobes spreading, obcordate, mouth more or less annulate. *Anthers* small, oblong. *Ovary* globose; style slender, stigma capitate. *Capsule* globose, hardly exceeding the calyx; crown horny, with five split valves. *Seeds* granulate.—*J. D. H.*

Fig. 1, Calyx and pistil; 2, corolla laid open; 3, pistil; 4, ripe fruit:—*all enlarged.*

M.S. del. J.N Fitch lith.

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Tab. 6733.

LOTUS PELIORHYNCHUS.

Native of Teneriffe.

Nat. Ord. Leguminosæ.—Tribe Loteæ.

Genus Lotus, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 490.)

Lotus *peliorhynchus*; fruticulus cano-sericeus, ramosissimus, ramis gracilibus decurvis, ramulis filiformibus, foliis sessilibus, foliolis filiformibus, floribus axillaribus solitariis binisve breviter pedicellatis, calycis sericei curvi ad medium 5-fidi lobis lanceolatis acuminatis falcatis sinubus acutis, corollæ coccineæ vexillo corniforme abrupte uncinatim recurvo, alis longioribus dimidiato-lanceolatis subacutis, carina alis longiore longe rostrato incurvo.

Heinekenia peliorhyncha, *Webb MSS. in Bourg. Plant. Canariens.* n. 805; *et in Bourgeau Plant. itin. secund.* n. 1319 (*Heinchenia*).

Pedrosia Berthelotii, *Lowe MSS.*

The Canary Islands are remarkable for the number and variety of the endemic species of *Lotus* which they contain, and of these none is to compare with the subject of the present plate for singularity or beauty. It is also an exceedingly rare plant. Accompanying a specimen given by M. Berthelot (the companion of Webb in his exploration of the Canaries, and joint author of the History of the Islands) to the Baron de Pavia, and now in the Herbarium at Kew (formerly in that of the Rev. R. T. Lowe), I find the following memorandum in French:—"This curious species, commonly called Pico de Paloma (Pigeon's beak), grows exclusively in Teneriffe, in the great ravine of Tamadava, on the most precipitous rocks. My lamented friend P. B. Webb recommended me earnestly to search for this plant, of which we had been shown a very small specimen in 1828. At last I have procured a specimen, but too late for my friend to receive it! it is this that I offer to my worthy friend Castallo de Pavia." To this specimen Mr. Lowe had attached the name "*Pedrosia Berthelotii*, Lowe (*Heinchenia peliorhyncha*, Webb MSS.)," a name by which it seems to be known in Teneriffe, but which I nowhere find

published. I would gladly adopt it, were it just to abandon that given by Webb, and circulated on two occasions in printed slips, with number and locality attached.

For seeds of this singular and beautiful plant the Royal Gardens are indebted to Mr. Wildpret, of the Orotava Botanical Gardens, Teneriffe, which were received in 1881, and the plants flowered in a cool greenhouse in May of last year.

Descr. A small excessively branched slender bush, clothed with appressed very short silky pubescence, giving it a silvery hue. *Branches* decurved, woody, slender; branchlets divaricate, filiform, leafy. *Leaves* rather crowded, spreading, sessile; leaflets two-thirds to three-fourths of an inch long, filiform. *Flowers* one and a half inch long, axillary, loosely crowded on short shoots towards the ends of the branches, solitary or two together, very shortly pedicelled. *Calyx* three-fourths of an inch long, green, silky, tube subcampanulate, five-angled, cleft to the middle into five ovate-lanceolate acuminate falcate lobes, of which the two upper are much the largest. *Corolla* scarlet. *Standard* narrowly lanceolate, sharply recurved like a horn. *Wings* shortly clawed, much broader and rather longer than the standard, dimidiate-lanceolate, subacute, cordate at the claw; keel longer than the wings, incurved, narrowed to a long point. *Staminal tube* long, slender; free portions of the filaments capillary, five longer as long as the tube, four shorter half as long. *Style* unequally cleft into two subulate arms.—*J. D. H.*

Fig. 1, Portion of branch and leaves; 2, calyx; 3, corolla; 4, stamens; 5, style arms:—*all enlarged.*

A.B.del,J.N.Fitch,lith.

Vincent Brooks, Day & Son lith.

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TAB. 6734.

MORINA COULTERIANA.

Native of the Western Himalaya.

Nat. Ord. DIPSACEÆ.

Genus MORINA, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 158.)

MORINA *erecta*; elata, superne pubescens v. tomentosa, foliis longe spinosis radicalibus anguste lineari-oblanceolatis in petiolum subangustatis, caulinis 3–4-verticillatis sessilibus, involucello villoso, calycis lobis subæqualibus 2-fidis lobulis pungentibus, corollæ flavæ pubescentis tubo gracillimo, staminibus perfectis 2 corollæ lobis brevioribus.

M. Coulteriana, *Royle Ill. Pl. Himal.* 245; *Clarke in Fl. Brit. Ind.* vol. iii. p. 217.

M. breviflora, *Edgew. in Trans. Linn. Soc.* vol. xx. p. 62.

The only species of *Morina* hitherto figured in this Magazine is the *M. longifolia*, Wall., Plate 4092, a very handsome plant, with bright rose-coloured flowers edged with white, and black anthers; it is a common plant throughout the whole length of the Himalaya. The present species is much more restricted in its range, extending only from Garwhal to Kashmir, where it inhabits high elevations, 9,000 to 13,000 feet; it, however, extends westwards into Affghanistan, having been gathered in the Kurrum valley by Dr. Aitchison; and to the northwards in Kashgar. The flowers vary considerably in length, but not in other characters; those with short corolla-tubes (about half of an inch long) gave rise to the *M. breviflora*, Edgew.; the longest flowers I have seen are those of specimens from Affghanistan.

The first cultivated specimens of this *Morina* were raised by Mr. Isaac Anderson Henry, who sent a flowering specimen to Kew in 1880. The plant from which the plate here given was made, was raised from seed sent by Dr. Aitchison from Affghanistan, and which flowered in the Royal Gardens in August, 1883. There are some very fine species of *Morina* still to be introduced from the

Himalaya, especially the *M. betonicoides*, Benth., of Sikkim, which has pale purple flowers; and *M. polyphylla*, Wall., which has whorls of many leaves.

Descr. Glabrous below, above pubescent or laxly tomentose. *Root* stout, fusiform. *Stem* six to eighteen inches high, stout, simple, grooved, leafy. *Radical leaves* four to twelve inches long, by one-half to one inch broad; narrowed more or less into a petiole, margin sinuate-toothed, spinous-pointed, the teeth ending in rigid horizontal yellow spines, which are often as long as the leaf is broad, but sometimes small and slender; cauline three or rarely four in a whorl, sessile, connate at the base, spreading or recurved. *Spikes* interrupted, two to six inches long; bracts one to two inches long, very rigid, connate into a broad cup, rigidly spinous. *Involucel* cylindric, truncate, woolly, mouth with many short and two much longer unequal spinous teeth. *Calyx* and ovary about half an inch long, green, woolly or glabrate, calyx-tube about as long as the subequal bifid lobes with spinescent tips. *Corolla* from half an inch to an inch and a quarter long, sparsely villous with long hairs, pale rather greenish yellow, tube very slender, curved; lobes oblong retuse; throat hardly dilated. *Stamens* two, reaching about half the length of the corolla-lobes; filaments hairy near the top at the back; anthers oblong, yellow, cells unequal. *Seeds* furrowed in front.—*J. D. H.*

Fig. 1, Longitudinal section of flower; 2, involucel; 3, ovary and calyx; 4, stamens; 5, top of style and stigma; 6, transverse section of involucel, pericarp, and seed:—*all enlarged.*

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Tab. 6735.

PHACELIA CAMPANULARIA.

Native of Southern California.

Nat. Ord. Hydrophyllaceæ.—Tribe Phacelieæ.

Genus Phacelia, *Juss;* (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 827.)

Phacelia (Whitlavia) *campanularia;* glanduloso- pubescens v. -hirsuta, foliis omnibus longe petiolatis inferioribus orbiculari-ovatis cordatisve obtusis sinuato-crenatis, racemis simplicibus laxifloris, calycis segmentis linearibus obtusis, corollæ campanulatæ violaceæ tubo ½-pollicari lobis vix duplo longiore, fauce maculis 5 oblongis albis demum flavis notata, filamentis longe exsertis squamis glabris parvis subquadratis, stylo 2-fido ramis elongatis capillaribus, ovario tomentoso apice barbato, ovulis numerosis.

P. campanularia, *A. Gray, Synopt. Fl. N. Am.* vol. ii. part 1, p. 164, *et in Bot. Calif.* vol. ii. p. 467; *Rolfe in Gard. Chron. N. S.* vol. xvii. p. 51, and vol. xx p. 135, f. 22.

A near ally of the beautiful *Whitlavia grandiflora*, Harv., Plate 4813 (*Phacelia Whitlavia*, A. Gray), with smaller flowers, but of even a more brilliant blue, rivalling those of the most admired Gentians. It is a native of San Bernardino and San Diego countries in Southern California, countries swarming with species of the genus which, including *Eutoca*, *Whitlavia*, and others, now numbers fifty-seven species, natives for the most part of the Western United States.

P. campanularia was raised by Mr. Thompson, of Ipswich, who kindly forwarded to Kew specimens for figuring in this work. It flowered in the open border in July, 1882.

Descr. A glandular-pubescent annual, six to ten inches high, varying much in pubescence, branched from the base; branches rather stout, succulent, brown. *Leaves* long-petioled, all subsimilar, one to two inches long, rounded ovate or cordate, obtuse, coarsely sinuate-crenate, hairy on both surfaces; petiole as long as the blade, stout. *Cymes* simple, terminal, lax-flowered. *Flowers* pedicelled, one to one and a quarter inch in diameter. *Calyx-segments* linear, obtuse, hairy and glandular, shorter than the corolla-tube. *Corolla* exactly campanulate, deep bright blue

within, pale without, throat with five small oblong white spots within opposite the sinus, which turn yellow in age; lobes rounded, short, spreading and recurved. *Stamens* far exserted, filaments very slender, glabrous, with a small square glabrous scale at the base of each in front; anthers small, oblong. *Orary* pubescent, bearded at the top, cells many-ovuled; style capillary with two long capillary arms. —*J. D. H.*

Fig. 1, Calyx; 2, base of corolla laid open, showing bases of filaments and scales: 3 and 4, anthers; 5, ovary; 6, transverse section of the same; 7, young seed:— ***all enlarged.***

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Tab. 6736.

NYMPHÆA ALBA *var.* rubra.

Native of Sweden.

Nat. Ord. Nymphæaceæ.—Tribe Nymphææ.

Genus Nymphæa, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 16.)

Nymphæa alba, *Linn. Sp. Pl.* n. 729; *DC. Prodr.* vol. i. p. 115; *Caspary in App. Ind. Hort. Berol.* 1855.

Var. *sphærocarpa-rubra*; floribus roseis, fructu subgloboso.

N. alba (sphærocarpa) rubra, *Caspary in Bot. Zeit.* 1871, p. 874; *Lönnroth in Bot. Not.* 1856, p. 124; *Herb. Norm.* vol. xvi. p. 32; *Liebm. et Lange in Fl. Dan. Suppl.* fasc. iii. p. 7, t. 141.

N. alba *var.* rosea, *Masters in Gard. Chron.* 1878.

N. sphærocarpa *var.* rubra, *Duchartre in Journ. Soc. Hort.* 1877, p. 817.

N. Caspary, *Carriere Rev. Hortic.* 1879, p. 230, *cum ic. pict.*

At Plate 6708 was figured and described the rose-coloured variety of the American White Water Lily (*N. odorata*, var. *minor*, *floribus roseis*), which in point of both size and brilliancy of colour falls far behind the subject of the present plate, which has of late attracted more attention by far amongst horticulturists, due to its larger size and the more vivid colour of its flowers. Hitherto only one native locality is known for it, a Lake Fagertärn in the parish of Hammar, in Nerika (in the N.W. of Oster-Gothland, Sweden), where it was discovered in 1856 by B. E. Kjelmark. It was first published by Dr. Caspary, and referred to the variety *sphærocarpa* of *N. alba*, distinguished by the globose form of the fruit, and it has been figured in the "Flora Danica" (cited above), where however the leaves are represented as very small, only three to four inches in diameter, and with acute or subacute basal lobes; whilst those of the Kew plants are a foot in diameter. They are, however, small in the figure given by Carriere in the "Revue Horticole," where the colour of the flower is well represented. In this latter respect, however, there

must be a good deal of variation, for the colours represented in "Flora Danica" are a muddy rose, whilst the description, referring of course to the wild plant, states that the outer petals are rosy, or white tinged with rose, the intermediate intensely rosy, the innermost with the filaments and tips of the stigma deep red-brown. Now on first flowering in 1878 of the Kew plant I remarked the muddiness of the colouring, and it was not till later that flowers of the bright hue given in the plate have appeared. May we not, then, expect that by cultivation and selection still more vivid hues shall be obtained?

For the introduction of this beautiful plant into cultivation, horticulturists are indebted to M. Froebel, of Zurich, an amateur who by his ability, zeal, and energy in the introduction of interesting hardy plants, no less than by his liberality in distributing them, has laid the gardening world under very heavy obligations. He finds that the plant comes quite true from seed, and is of vigorous growth, perfectly hardy (as was to be expected), and that it flowers eight or ten days before the white form of the species; it is also a very free flowerer. The Kew specimen which was presented by Prof. Agardh, of Lund, in 1876, has bloomed in June for several years, and a succession of flowers appears for several weeks.—*J. D. H.*

Fig. 1. Flower of outer series; 2. of middle, and 3, of inner series; 4, vertical section of ovary:—*of the natural size.*

A.B.del,J.N.Fitch,lith.

Vincent Brooks Day &

Tab. 6737.

TILIA petiolaris.

Native of the Crimea?

Nat. Ord. Tiliaceæ.—Tribe Tilieæ.

Genus Tilia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 236.)

Tilia *petiolaris*; arbor elata, ramulis pendulis, foliis subtus floribusque canopubescentibus, foliis gracillime petiolatis petiolo laminæ æquilongo pendulis oblique cordato-rotundatis acutis argute dentatis superne glaberrimis, bracteis sessilibus elongatis a basi sensim dilatatis glabris v. subtus canis, sepalis utrinque tomentosis intus basi squamula villosa instructis, petalis elliptico-oblongis obtusis glabris, squamis 5 petaloideis spathulatis stamina superantibus petalis fere æquilongis, stylo brevi glaberrimo, stigmate capitato integerrimo, fructibus depresso-globosis obscure 5-lobis hic illic tuberculatis.

T. petiolaris, *DC. Prodr.* vol. i. p. 514.

The beautiful Lime here figured has long been a puzzle to arboriculturists. There are many specimens of it at Kew, where it has long been cultivated under the names of *Tilia americana pendula*, *T. alba-pendula*, *T. platyphylla-pendula*, and *T. argentea pendula*. The first of these being the most frequent name, I directed Dr. Asa Gray's attention to this tree when in this country in 1882, and he at once declared against its being an American species, and suggested a comparison with the little known *T. petiolata* of De Candolle, a tree of which neither flower nor fruit were described, nor anything further known of its origin than that it is cultivated in the Garden of Odessa in the Crimea. This species De Candolle places next to the Hungarian Lime (*T. argentea*, Hort. Par.; *T. alba*, Waldst. and Kit.), and separates it from that plant by the leaf-blade being only twice as long as the petiole, whilst that of *T. argentea* is four times as long. Referring to the Herbarium, the only specimen I find named *T. petiolaris* is one cultivated at Therapia, near Constantinople, collected and named by Montbret, and communicated to Sir W. Hooker by the late P. B. Webb. There are, however, two other specimens which agree with it; one called *T. argentea*, collected by Nöe in the Bithynian Olympus, and the other named *T. alba*, from Hungary, collected by Pfendler. Unfortunately none of these are in fruit, and as the White Lime has often petioles as long in proportion to the blade as those of *T.*

February 1st, 1884.

petiolaris, it would be rash to refer them to this latter plant. At first sight indeed *T. petiolaris* would pass for a variety of the White Lime, with drooping branches, longer petioles, and leaves wanting the crumpled surface so characteristic of that plant, for their pubescence, inflorescence, and bracts seem to be identical; but their fruits are entirely different. Those of *T. argentea* are ellipsoid, five-angled, and smooth, whilst those of *T. petiolaris* are depressed five-lobed spheres, and more or less warted.

T. petiolaris is not taken up in any other botanical or arboricultural work known to me than De Candolle's; it does not appear in Boissier's "Flora Orientalis." This, however, is not surprising, when it is considered how little attention has been paid to the forest trees of the East, and that it is within the last few years only that the horse-chestnut has been traced to its native forests in Turkey.

T. petiolata is one of the most beautiful of the genus, is quite hardy, and like the White Lime, it matures seed in this country. The flowers which appear in July are very fragrant.

Descr. A forest tree, fifty feet and more high, trunk erect, cylindric; head oblong or spreading, back pale brown, branchlets pendulous, leafy. *Leaves* on slender petioles as long or longer than the blade, glabrous above, covered beneath with hoary pubescence; blade three to four inches in diameter, obliquely orbicular with an unequally cordate base, flat, acute or apiculate, sharply toothed, pale green above. *Bracts* two to four inches long, sessile, gradually dilated from the base to the rounded tip, veined, glabrous or hoary beneath. *Flowers* about half an inch in diameter, yellow green. *Sepals* oblong, tomentose on both surfaces, furnished at the very base within with a small villous scale. *Petals* elliptic-oblong, obtuse. *Scales* five, petaloid, as long as the petals, obovate spathulate, inserted amongst the stamens. *Stamens* numerous; anthers with discrete cells. *Ovary* pubescent, globose; style very short, glabrous, swollen in the middle; stigma capitate, obscurely five-lobed. *Fruit* one-third of an inch in diameter, depressed globose, five-lobed, pericarp between coriaceous and crustaceous, warted.—*J. D. H.*

Fig. 1, Vertical section of flower; 2, stamens; 3, petal; 4, ovary; 5, transverse section of ditto; 6, transverse section of fruit; 7, seed; 8, section of same showing the embryo:—*all enlarged.*

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TAB. 6738.

PENSTEMON LABROSUS.

Native of California.

Nat. Ord. SCROPHULARIACEÆ.—Tribe CHELONEÆ.

Genus PENSTEMON, *Mitch.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 940.)

PENSTEMON (Eupenstemon) *labrosus*; elatus, glaberrimus, gracilis, foliis inferioribus anguste oblanceolatis obtusis v. subacutis, supremis anguste linearibus, paniculæ racemis elongatis laxifloris erectis, floribus horizontalibus gracile pedicellatis, sepalis parvis ovatis acutis, corolla sesquipollicari coccinea, lobis inferioribus linearibus subacutis patentibus (non deflexis) supremo ceteris non longiore oblongo apice 2-fido, fauce glaberrima, filamentis glaberrimis, antherarum loculis divaricatis, ovario glaberrimo.

P. barbatus, *Nutt.* var. labrosa, *Gray in Bot. Californ.* vol. i. p. 622.

P. labrosus, *Gard. Chron.* 1883, vol. ii. p. 536, fig. 91.

A very distinct species of *Penstemon*, described by Gray as a remarkable form of the Mexican *P. barbatus*, agreeing with the var. *Torreyi* of Colorado in the want of beard, but differing in the long narrow lobes of the lower lip. An examination of a large suite of specimens of *P. barbatus* and its varieties, proves that *P. labrosus* is quite a different species from that, having a much more slender and scarlet corolla, with the three lower lobes quite as long as the upper. The calyx is also smaller, the flowers are more horizontal, and the lower corolla lobes are not sharply reflexed as in *P. barbatus*, but spread.

P. labrosus was discovered by Dr. Rothrock in Southern California, during Wheeler's expedition in 1875, in Mount Pinos, south of Tejon, at an elevation of 7000 feet. For the specimen here figured I am indebted to Mr. Thompson of Ipswich, the introducer of so many new and rare American plants, with whom it flowered in August of last year.

DESCR. Quite glabrous. *Stem* three to four feet high, slender, erect, twiggy, terete, red-purple below. *Leaves*, lower four to five inches long by a quarter to half an

inch broad, narrowly oblanceolate, narrowed into the petiole, quite entire, obtuse or subacute, coriaceous; upper leaves shorter, quite linear. *Panicle* of long slender lax-flowered racemes; rachis and branches very slender, stiff, erect; bracts minute; pedicels slender, rigid, erect, half an inch long or less. *Flowers* one and a half inch long, horizontal or ascending. *Calyx* one-fourth of an inch long, sepals ovate, acute, upper smaller, all appressed. *Corolla* scarlet, tube narrow; lobes half the length of the tube; upper horizontal, oblong, bifid at the tip; lower as long, linear, subacute, spreading; throat glabrous. *Stamens* as long as the corolla, filaments quite glabrous; anther-cells divaricate. *Ovary* glabrous; style filiform, glabrous, stigma entire.—*J. D. H.*

Fig. 1, Flower cut vertically; 2, calyx; 3, stamens; 4, top of style and stigma; 5, ovary cut transversely:—*all enlarged.*

M.S. del. J.N. Fitch, lith.

Vincent Brooks Day & Son Imp.

Tab. 6739.

GLADIOLUS Quartinianus.

Native of Tropical Africa.

Nat. Ord. Irideæ.—Tribe Ixieæ.

Genus Gladiolus, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 709.)

Gladiolus *Quartinianus*; cormo globoso, tunicis fibrosis, caule simplici tereti 3–4-pedali, foliis productis circiter 3 anguste ensiformibus acuminatis rigide coriaceis, floribus 4–6 laxe spicatis, spathæ valvis magnis lanceolatis herbaceis, floribus magnis splendide luteo-rubris, tubo elongato infundibulari-cylindrico, limbi segmentis 2 superioribus exterioribus oblongis acutis interiori superiori obovato obtuso minute cuspidato dorso convexo, 3 inferioribus oblongis acutis, interioribus flore expanso patulis, inferiori valde decurvato, genitalibus limbo distincte brevioribus, capsulis oblongis obtuse lobatis, seminibus discoideis late alatis.

G. Quartinianus, *A. Rich. Fl. Abyss.* vol. ii. p. 307; *Baker in Journ. Linn. Soc.* vol. xvi. p. 176.

G. natalensis, *Klatt, Erganz*, p. 6, *ex parte*, non *Reinw.*

This fine species appears to be widely spread in Tropical Africa. It was originally described from specimens gathered in Abyssinia by M. Quartin Dillon, after whom it was named; and we have since received it from that country from Mansfield Parkyns, Esq. It was found in Angola by Dr. Welwitsch; in the Zambesi country by Sir John Kirk; by Dr. Schweinfurth both in the Djur country and Niam-niam land, and by the Rev. Mr. Wakefield in the Nyika country. Our drawing was made from specimens sent by Sir John Kirk, which flowered at Kew last October. By Dr. Klatt, in his latest paper, it is united with the well-known Cape *G. psittacinus*, Hook (*G. natalensis*, Reinw.). To me it seems to be quite different from the Natal plant, which is excellently figured, Bot. Mag. tab. 3032, both in its leaves and flowers, and to be nearer to *G. Cooperi*, Hook. in Bot. Mag. tab. 6202. I believe this is the first time it has ever been introduced into cultivation, and it certainly has a claim to take rank amongst the finest species of this beautiful genus.

February 1st, 1884.

Descr. *Corm* globose, an inch or more in diameter; outer tunics of matted or nearly free strong parallel fibres. *Stems* three or four feet in length, inflorescence included, simple, terete. Produced *leaves* about three, linear-ensiform, a foot or more long, half or three-quarters of an inch broad, narrowed gradually to the point, rigid in texture, strongly and prominently nerved. *Flowers* four or six, arranged in a very lax erect secund spike, variable in colour, usually yellow, more or less flushed and spotted with scarlet; spathe-valves herbaceous, lanceolate, about two inches long, the inner rather smaller and thinner than the outer. *Perianth-limb* narrowly funnel-shaped, curved, one and a half or two inches long; upper outer segments of the limb oblong, acute, about two inches long; upper inner obovate, obtuse, minutely cuspidate, standing forward, convex on the back; three lower segments smaller and more spreading, the lowest conspicuously deflexed. *Stamens* shorter than the perianth-segments; anthers linear, half an inch long. *Style-branches* falcate. *Capsule* oblong, brown, chartaceous, obtusely lobed, an inch and a half long. *Seeds* very numerous, discoid, with a broad membranous wing.—*J. G. Baker.*

Fig. 1, Front view of an anther; 2, back view of the anther; 3, summit of the style, with its stigmatose branches:—*all magnified.*

M.S. del

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Tab. 6740.

MASDEVALLIA Schlimii.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Masdevallia, *Ruiz et Pav.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 492.)

Masdevallia *Schlimii*; foliis longe petiolatis obovato-ellipticis apice rotundatis, scapis folia longe superantibus multifloris, vaginis remotis cylindraceis oblique truncatis, floribus majusculis, bracteis spathaceis, perianthii flavi brunneo creberrime conspurcati tubo brevissimo, sepalis in laminam subpanduriformem convexam 3-caudatam basi 2-lobam alte connatis, caudis sordide flavis sepalis 2–3-plo longioribus, petalis columnæ æquilongis angustis lineari-oblongis medio angustatis apices versus obtusos oblique truncatis, labello columnæ æquilongo breviter unguiculato lineari-oblongo basi bilobo supra basin constricto, medio incrassato et 2-auriculato, auriculis introflexis, apice in appendicem recurvam acutam carnosam producto, columna gracili apice integerrimo.

M. Schlimii, *Linden MSS.*; *Reichb. f. in Bonplandia*, vol. ii. p. 283; *et in Gard. Chron.* 1883, vol. i. p. 532, fig. 80.

This, as Dr. Reichenbach well observes, is allied to the remarkable *M. Ephippium*, figured at Plate 6208 of this work. It is, however, a much less robust plant, with smaller flowers; the lateral sepals are very much smaller, they want the curious crests of *M. Ephippium*, and their tails do not meet at the base, but are placed as far as possible apart. Though not nearly so large as *M. Ephippium*, it presents one of the larger and more robust species, and Dr. Reichenbach mentions that the leaves of his wild specimens are upwards of a foot in length. Its native country is the mountains of Merida, altitude 6000 feet, in Venezuela, where it was discovered in 1847 by the late Louis Schlim, half-brother of M. Linden; it was not, however, introduced till quite lately, by a collector of Messrs. Sander of St. Albans.

I am indebted for the specimen here figured to Sir Trevor Lawrence, who sent it in April, 1883.

I know of no plants in the whole range of the vegetable kingdom the organs of which are so difficult to describe in appropriate terms as those appertaining to the flowers of *Orchideæ*. In most genera of the Order this applies especially to the labellum, but in *Masdevallia* the three

outer sepals, whether by themselves or in combination, are even more impracticable than the lip.

DESCR. *Roots* tufted. *Leaves* a foot long and under, elliptic-obovate, narrowed into a stout petiole which is channelled in front and articulate above the base, tip rounded, substance very coriaceous, nerves three principal and many between them, all very obscure. *Scape* twice as long as the leaves, three- to six-flowered; sheaths distant, three-fourths of an inch long, tubular, membranous; mouth obliquely truncate; bracts like the sheaths, but shorter. *Flowers* one to one and a quarter inch long without the tails; pedicels exserted, half an inch long. *Ovary* a quarter of an inch long. *Perianth* yellow, closely mottled with bright brown spots; tails pale dirty yellow. *Sepals* combined into a somewhat fiddle-shaped convex lamina, with a very short tube; upper sepal short, concave with reflexed margins, broadly triangular-ovate, suddenly contracting into a slender tail two to two and a half inches long; lateral sepals with their free portions broadly ovate, diverging, with an acute sinus between them; tails one a half to two inches long. *Petals* as long as the column and closely applied to it, linear-oblong from a gibbous base, a little contracted in the middle, obliquely truncate at the top with an obtuse tip. *Lip* as long as the column, linear-oblong, contracted below the middle and a little dilated beyond it; base cordate with a very short claw; just beyond the middle the lip is thickened with an inflexed auricle on each side nearly reaching the centre of the blade, beyond this the blade is four-channelled; the top suddenly contracts into a thickened ovate lanceolate recurved appendage. *Column* slender, tip entire.—*J. D. H.*

Fig. 1. Top of ovary, lip, petals, and column; 2, column; 3, lip; 4, pollen-masses :—*all enlarged.*

M.S. del. J.N. Fitch Lith.

Vincent Brooks Day & Son Lith.

L. Reeve & Co. London.

Tab. 6741.

NOTOSPARTIUM Carmichæliæ.

Native of New Zealand.

Nat. Ord. Leguminosæ.—Tribe Galegeæ.

Genus Notospartium, *Hook. f.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 502.)

Notospartium *Carmichæliæ;* frutex v. arbor parva fere glaberrima, ramulis filiformibus pendulis, squamulis ad nodos minimis, floribus roseo-lilacinis ad nodos racemosis.

N. Carmichæliæ, *Hook. f. in Kew Journ. Bot.* vol. ix. p. 176, t. 3; *et in Handbook N. Zeal. Flor.* p. 51.

This, the "Pink Broom" of the residents in the Middle Island of New Zealand, is one of the most beautiful plants in the Colony, and is further remarkable as being a member of what is one of the largest families of plants in every part of the world where vegetation is found, except New Zealand. Indeed the absence of *Leguminosæ* in New Zealand, in contrast especially with their great abundance in Australia, is the most singular feature in the Flora of the Island; and those genera that do occur have for the most part little affinity with one another. Thus, of the five known genera, the principal is the endemic *Carmichælia*, consisting of eleven species of leafless shrubs, with pods quite unlike those of any other Leguminous plants; *Notospartium* is monotypic, and it stands next to *Carmichælia*, but has quite different pods. Two Australian genera follow; one is the large Australian one, *Swainsonia*, of which a single endemic species has been found in a single spot in the Middle Island of New Zealand; the other is the beautiful *Clianthus*, of which only two species are known, namely, "Sturt's Pea," *C. Dampieri* (Plate 5051), a native of the dry interior of Australia; and the familiar *C. puniceus* of our greenhouses (Plate 3584), which, though often seen about native houses in the north parts of the Northern Island of New Zealand, has never been found wild in that

or in any other country. The only other native Leguminous plant in New Zealand is the *Sophora* (*Edwardsia*) *tetraptera*, of which forms are figured in Plates 167, 1442, and 3735 of this Magazine, and it is hardly distinguishable from the Chilian and Fuegian species.

Notospartium is confined to the Middle Island; it was discovered on Christmas, 1853, by the late Dr. Munro, on the sandy and rocky banks of the Waihopai River in the Nelson Province; and it has since been found in the Canterbury Province by Dr. Haast and others. Though cultivated for some years in the Temperate House at Kew, it has never flowered there, and I am indebted to Messrs. Veitch for the specimen here figured, which arrived from their nursery in Combe Wood in July last.

Descr. A shrub or small ramous tree attaining twenty feet in height, with weeping cord-like leafless branches, laden at Christmas with short racemes of flowers. *Branches* terete, grooved, green, branchlets a foot long and upwards of the sixteenth of an inch in diameter, deeply grooved; nodes distant, not swollen, marked by a minute scale. *Leaves* on seedling plants alternate, obcordate, sparsely covered beneath with appressed hairs. *Racemes* one to one and a half inch long, subsessile, many-flowered; bracts minute; pedicels one-eighth of an inch long. *Flowers* one-third of an inch long, bright pink-purple. *Calyx* tubular-campanulate, minutely five-toothed. *Standard* broadly obcordate, streaked with red, recurved. *Wings* dolabriform, longer than the keel, obtuse. *Keel-petals* cuneate, oblong, tip rounded. *Upper stamens* free; anthers very small. *Ovary* linear, style bearded below the stigma. *Pods* one to one and a half inch long, by one-eighth of an inch broad, nearly straight, subacute, torulose, six- to ten-seeded; valves coriaceous, subseptate within. *Seeds* transversely oblong, compressed, funicle very short. *Cotyledons* pyriform, radicle very stout, geniculate.—*J. D. H.*

Fig. 1, Seedling plants; 2, flowering branch; 3, flower; 4, standard; 5, keel; 6, wings; 7, calyx and stamens; 8, young pod; 9, branch with ripe pods; 10, pod; 11, portion of valve with seed; 12 and 13, embryos:—*all but figs.* 1, 2, and 9, *enlarged.*

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Tab. 6742.

KNIPHOFIA foliosa.

Native of Abyssinia.

Nat. Ord. Liliaceæ.—Tribe Hemerocalleæ.

Genus Kniphofia, *Mœnch.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 775.)

Kniphofia *foliosa*; acaulis, foliis ensiformibus acuminatis bipedalibus viridibus e basi ad apicem sensim attenuatis lateribus inflexis margine denticulatis, scapo valido stricto 2–3-pedali, racemo denso elongato, pedicellis brevissimis, bracteis ovatis pedicello 2–3-plo longioribus, perianthio cylindrico luteo vel rubro tincto segmentis brevissimis, genitalibus longe exsertis.

K. foliosa, *Hochst. in Flora*, 1844, p. 30; *Baker in Trimen Journ.* 1874, p. 4.

K. Quartiniana, *A. Rich. Fl. Abyss.* vol. ii. p. 324; *Baker in Journ. Linn. Soc*, vol. xi. p. 362; *Gard. Chron.* 1876, p. 45; *Regel Gartenfl.* vol. xxvi. (1877). pp. 89, 196, tab. 907, *excl. syn.*

The genus *Kniphofia*, as understood in the Genera Plantarum, is restricted to the Cape and mountains of Abyssinia, with the exception of one species that was found near the equator by Speke and Grant, and one that has lately been found on the high mountains of Central Madagascar by the Rev. R. Baron. Altogether there are six species in Abyssinia, none of which are identical with those that occur at the Cape. Three of them have been introduced into cultivation of late years through seeds sent by Schimper to the Berlin Garden, and all three have become fully established in our gardens, and have been freely distributed by Leichtlin. Two out of the three, *K. comosa*, tab. 6569, and *K. Leichtlinii*, tab. 6716, have been figured lately in the Botanical Magazine. The present plant is one of the most robust of the whole genus, and may be recognized at a glance by its broad leaves and much-exserted stamens. Our drawing was made from a plant that flowered with Mr. Elwes at Cirencester in December, 1881. There are three other Abyssinian species not in cultivation, *K. abyssinica*, *K. isoetifolia*, and *K. Schimperi*, all of which have narrow leaves and few-flowered racemes. The two plants from Angola which I

referred to the genus are regarded by Mr. Bentham as the type of his new genus, *Notosceptrum*.

A coloured drawing which Leichtlin has sent us of the plant as grown at Baden-Baden shows a more robust habit than the English-grown examples, and a tinge of red in the flower which they do not get in our less sunny and more humid climate.

Descr. Acaulescent. *Rootstock* short, cylindrical, with numerous fleshy root-fibres. *Leaves* aggregated in a dense basal rosette, ensiform, acuminate, three or four inches broad at the clasping base, an inch or an inch and a half broad a foot above it, tapering gradually into a long point, green on both surfaces, moderately firm in texture, the sides inflexed all the way up from midway between the midrib and edge, the margin obscurely denticulate. *Peduncle* stout, erect, terete, two or three feet long, furnished with a few much-reduced leaves. *Flowers* in a very dense cylindrical raceme half a foot or a foot long; pedicels very short; bracts ovate, scariose, two or three times as long as the pedicels. *Perianth* cylindrical, bright yellow, or tinged with red under an inch long; segments very short, semi-orbicular. *Stamens* and style much exserted.—*J. G. Baker.*

Fig. 1, A flower cut through vertically; 2, anthers; 3, stigmatose apex of the style; 4, horizontal section of the ovary, *all enlarged;* 5, section of a leaf, from near the base, *natural size.*

M.S del. J.N.Fitch lith.

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6743

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Tab. 6743.

PICEA ajanensis.

Native of Japan and the Amur River.

Nat. Ord. Coniferæ.—Tribe Abietineæ.

Genus Picea, *Link.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 439.)

Picea *ajanensis;* arbor erecta, ramis horizontalibus rigidis supra densissime foliosis foliis imbricatis subtus inter folia bifariam patentia nudis, foliis $\frac{2}{3}$-$\frac{3}{4}$ pollicaribus compressis linearibus acutis v. subacutis basi in pulvinum brevem abrupte contractis, facie ramo aversa læte viridi nitida medio lata elevata, facie contraria valde glauco-cœrulea stomatibus creberrimis costa tenui marginibusque viridibus, strobilis in ramis terminalibus junioribus erectis oblongo-cylindraceis læte rubro-purpureis, maturis deflexis 1–2-pollicaribus utrinque attenuatis, squamis ovato-oblongis undulatis superne erosis, bracteis minutis, seminis ala ovato-oblonga.

P. ajanensis, *Fisch. ex Trautv. et Mey. in Middend. Reise,* p. 87, t. 22, 24; *Regel Fl. Ussur.* p. 149; *Trautv. et Maximov. Prim. Fl. Amur.* p. 261; *Carriere Traité Générale,* p. 259; *Masters in Gard. Chron.* N.S. xiii. vol. i. (1880), p. 115. f. 22, and p. 212, f. 39, 40, 42; *Regel et Tiling. Fl. Ajan.* pp. 119, 427, fig. 81 ad 84.

P. jezoensis, *Maxim. in Bull. Acad. Imp. Petersb.* vol. xv. p. 235.

Abies ajanensis, *Rupr. Pl. Maxim.* p. 436; *Pl. Maack.* p. 566; *Lindl. et Gord. in Journ. Hort. Soc. Lond.* vol. v. p. 212.

Pinus Menziesii, *Parlat. in DC. Prodr.* vol. xvi. pt. 2, p. 418, *quoad Plant. Asiat.*

A. Alcockiana, *Hort. plur. et Murray, Pines and Firs of Japan,* p. 66, *quoad folia.*

A. sitchensis, *Koch, Dendrolog.* vol. ii. pt. 2, p. 247 (*non Bongard.*).

Veitchia japonica, *Lindl.*

This is in several respects the handsomest of all the species of *Picea*, in so far at least as can be judged from somewhat young specimens. Though wanting the drooping larch-like habit of the Himalayan *P. Morinda* and the graceful branching of the Caucasian *P. orientalis*, it excels these and all others in the bold habit, the dark green of the shining foliage that clothes the upper sides of the branches, where the leaves imbricate over one another as in *Abies Nordmanniana* and *amabalis* (true), and the beautiful glaucous blue white of that which appears on the under side. This effect of contrast is much heightened in bright sunshiny weather, when the tips of the branches turn up, disclosing to the eye the pale surface of the leaves. Add to this the rich vinous purple of the colour of the young cones, which is not surpassed in beauty by the violet

of those of *Abies Webbiana*, or the red of some of the young larch cones, and it will be allowed that it has many attractions.

I am indebted to my friend Dr. Masters for the identification of this species (confirmed by M. de Maximoviez), which, as he clearly points out, has been confused with *P. Alcockiana*, a plant differing wholly in habit, in the leaves inserted all round the branches, in their square form and indistinctly glaucous uppersurface, and in the resin canals not being (as they should have been represented in fig. 3) close to the epidermis of the leaf. It has further been confused with *P. Menziesii*, which extends from British Columbia to California, and which has been referred to *P. sitchensis*, a native of Alaska, but this has more square and needle-pointed leaves. There is, however, in Bentham's Herbarium a spruce from that far northern region, collected by Hinds in 1841, which is more likely to be *P. ajanensis*, and which, as Dr. Masters has indicated in the Herbarium, differs from *P. Menziesii* in the flatter, less deeply keeled and less acute leaves. It has the seeds of *A. ajanensis* and its small included bracts, but the cones are twice as large.

There are still doubts as to the synonymy of *P. ajanensis*. Gordon's Pinetum probably includes it both under this name and that of *Alcoquiana*, and there is hopeless confusion in Franchat and Savat's "Flora of Japan." Then again, Maximovicz (in Herb.) refers to it *P. microsperma*, Lindl., of which Masters has made a variety (*P. ajanensis*, var. *microsperma*). Lastly, Maximovicz includes under it, and no doubt rightly, Lindley's *Veitchia japonica*, a genus founded on the abnormal structure of the buds, which being altered by the puncture of probably *Adelges abietis* or an allied insect, have (as in the case of Conifers with us) assumed the form of cones.

P. ajanensis has a considerable range; commencing in lat. 50° in the valley of the Amoor, it is continued southward and eastward to its mouth, on the mountains. Thence it crosses to Japan, and reappears on the celebrated mountain Fusiyama, whence most of the plants grown in this country have been procured.—*J. D. H.*

Fig. 1, Leaves viewed on surface facing the light; 2, ditto from opposite surface; 3, transverse section of leaf (the resin-canal not near enough to margin); 4, outer face of scale and bract; 5, inner face of ditto and ovules:—*all enlarged.*

M.S. del. J.N. Fitch, lith

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Tab. 6744.

TINNEA æthiopica, *var.* dentata.

Native of East Tropical Africa.

Nat. Ord. Labiatæ.—Tribe Ajugoideæ.

Genus Tinnea, *Kotsch. et Peyr.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1220.)

T. æthiopica, *Kotsch. et Peyr. in Plant. Tinn.* p. 25, t. 11; *Bot. Mag.* t. 5637.

Var. *dentata*; frutex rigidus, cano-puberulus, divaricatim ramosus, foliis parvis elliptico- v. obovato-oblongis obtusis apicem versus irregulariter dentatis, floribus subsolitariis parvis pollicaribus, calycis tubo subcylindraceo, corollæ rufo-brunneæ labio inferiore vix ½ poll. lato.

The genus *Tinnea* seems destined to give some trouble to systematists. The originally discovered species, *T. æthiopica*, was first published in the Botanical Magazine (Tab. 5637) in 1867, from plants raised from seeds sent to Europe by the discoverer herself, Madame Tinne, the famous Dutch lady who fell a sacrifice to her zeal for African travel (she died of fever on the White Nile in 1863); and with the description given in this Magazine is a citation of the work, which was then only in preparation, illustrating the botanical results of her disastrous expedition. To my astonishment, when the latter work appeared, it contained an admirable plate of a plant called *Tinnea æthiopica*, but which it was difficult to recognize as the same with that figured in the Magazine, and which (or cuttings from which) has flowered annually at Kew ever since its introduction. The plant figured in "Plantæ Tinneanæ" has very slender branches, leaves two-thirds to three-quarters of an inch long, and subsolitary flowers so precisely resembling those of that now here figured, that I need not describe them; whereas the Kew plant has stems twice as stout, leaves two to two and a half inches long, flowers two or more together, twice as large, with an almost globose bladdery calyx, and a very dark corolla with proportionally larger and much broader lobes, of which the mid one is

almost black-purple. · No one would guess that they were the same species.

It is stated under *T. æthiopica* in this work, that it has a wide geographical range. Madame Tinne found it at Djur, in Ethiopia, in lat. 8° N., Dr. Kirk on the Manganjer Hills in lat. 17° S., Capt. (now Col. Sir Jas.) Grant in the Unyow Forest, lat. 3° N. Since that time it has been collected at various places in Central and Eastern Africa by Petherick, and lastly from the coast itself at Mombassa, opposite Zanzibar, by Schweinfurth.

From the last-named locality Sir John Kirk had the goodness to procure plants, one of which he sent to Kew in a Ward's case. It arrived safely, flowered in May, 1883, and is here pourtrayed. Sir John happened to be at home on leave, and I directed his attention to the extraordinary difference between it and both the previously-figured plants in habit, foliage and flower; but his experienced eye, which is one of those that can recognize important resemblances under a very thick mask of differences, led him to the conclusion that they were all climatal varieties of one species; and reflecting how much our own plants had degenerated since they had been removed to the Palm House, I did not doubt his conclusion, and that soil or cultivation would account for the variations. Soon after his return to Zanzibar last autumn, he sent me (in November) flowering specimens from off the same bush as that from which the Kew plant now figured was taken, and it certainly differs most remarkably from the Kew one and from Schweinfurth's wild specimens, the leaves being quite minute, not a quarter of an inch long, and the inflorescence forming terminal racemes six to eight inches long; the flowers on the other hand appear to be identical.

It remains to add that specimens in the Herbarium collected by Grant and by Petherick have quite the robust habit and size of leaf of the original Magazine plate, and have flowers much larger than that now published; so that I suspect Madame Tinne may have sent seeds from plants growing in a different locality or soil from those that prevailed when the dried specimens which supplied the plate in *Plantæ Tinneanæ* were obtained. Curiously enough, the last specimens received at Kew of *T. æthiopica* were sent for naming by Baron Eggers from Dominica (in the West

Indies), whither living plants were sent from Kew to the late Dr. Imray. The habit and foliage of these are those of the original Kew plants.

There are several other species of *Tinnea* to be introduced from Africa, and which, now that the dark country is so fast being opened up, we may hope soon to obtain.—*J. D. H.*

Fig. 1, Portion of leaf; 2, base of corolla and stamens; 3 and 4, stamens; 5, ditto seen from behind; 6, pistil:—*all enlarged.*

2.

3.

1.

M.S. del, J.N. Fitch, lith.

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Tab. 6745.

CITRUS MEDICA, *var.* acida.

The Cultivated West Indian Lime.

Nat. Ord. Rutaceæ.—Tribe Auranticeæ.

Genus Citrus, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 305.)

Citrus *medica*; fruticosa, rarius arborescens, ramulis sæpius purpurascentibus, foliis ovatis obovatis oblongisve rarius ovato-lanceolatis subacutis crenatis, petiolo parvo nudo marginato v. medioeriter alato, fructu variabili umbonato **cortice pallido crasso v. tenui, pulpa acida v. miti.**

Var. *acida*; frutex spinosus, foliis 1–2-polliearibus, floribus inter minoribus solitariis v. 1–3-nis albis v. pallide roseis 4–5-meris, fructu minore subgloboso rarius ellipsoideo umbonato v. mamillato lævi pallido, cortice tenuissimo **glandulis minutis depressis, pulpa pallida acidissima.**

C. medica, *var.* acida, *Brandis For. Fl. of N.W. and Centr. Ind.* p. 52; *Hook. f. Fl. Ind.* **vol. i. p. 515.**

C. acida, 6th variety, *Roxb. Fl. Ind.* vol. iii. p. 390 *in part.*

C. Lima, *McFad. in Hook. Bot. Misc.* vol. i. p. 300, and *Fl. Jamaic.* p. 127.

C. Limonellus, *Hassk. Cat. Hort. Bogor.* p. 217, and ed. 2, p. 209; *Miquel Fl. Ind. Bat.* **vol. i. pt. 2, p. 528**; *Wall. Cat.* **n. 6386.**

C. Limetta, *Wight Ic. Pl. Ind. Or.* t. 958 (not of Risso).

The flowering and fruiting, by the Earl of Ducie, F.R.S., of the Lime of the West Indies, affords an opportunity of making better known a fruit which has been much misunderstood. I should premise that the word Lime is promiscuously applied to fruits very different to this, especially in British India, where the Sweet Limes of various forms are universally spoken of under that name; and that all these, together with the West Indian Lime, are varieties of the *Citrus medica* of Linnæus, which includes the Lemon, Citron, sweet and acid Limes of the East Indies, and the small globose-fruited plant here figured. *C. medica* is so closely allied to the *C. Aurantium*, Linn., which includes the sweet Orange, the bitter or Seville Orange, the Bergamotte, &c., as to have been classed with

it, as forms of one species, by several excellent authors, together with other fruits which do not concern us here.

The genus *Citrus* is essentially an Eastern one, and the forefathers of Oranges, Lemons, Citrons, and Limes are certainly tropical Asiatic, and may be found (though whether always in their pristine condition, as opposed to escapes from cultivation, is not easy to determine) in the hot valleys of the Himalaya, of the mountainous districts of Eastern Bengal, and of the Deccan. From tropical Asia they have, in their numerous cultivated forms, been transported into Africa, Australia, and the New World, where the Orange extends into the temperate zone; and the Lemon also, but with less power of enduring cold; whilst the small acid Lime seems confined to tropical or subtropical zones. Hence I do not find any plant exactly answering to the latter in the magnificent work of Risso and Poiteau illustrating the South European Oranges and Lemons, whilst in the Floras of the East and West Indies it is always included.

The first good account of it is by Rumph ("Hortus Amboinensis," vol. ii. p. 107, t. 29), published in 1750. He describes it under the Latin name of *Limonellus*, alias Limotenuis, or thin-skinned Lemon, answering to the Malayan name of Limon Nipis (in Dutch, Liemis-Boom), as a spinous bush with small leaves much brighter than those of the other Lemons, small flowers with the odour of those of the Lime of Martinique, five petals, spherical, smooth, fruit the size of an apricot, skin citron-coloured extremely thin, pulp greenish-white gratefully acid, having a delightful odour and taste. He adds that it is found in all the Oriental Islands, but never in the woods, always near houses, implying that it is not indigenous. The only author who has definitely taken up Rumph's plant is Hasskarl, who, in his first "Catalogus Horti Bogoriensis," published in 1844, has *C. Limonellus*, with two vars., a pointed-fruited and rounded-fruited; and in the second edition of the same work (1866) he publishes *C. Limonellus*, var. *globosa*, from Amboyna. B. Hamilton had previously alluded to it in his "Commentary on Rumph's Hortus Amboinensis" (Wern. Trans. vol. vi.); and the name *C. Limonellus*, Ham., accompanies specimens of a plant col-

lected by him in India, and distributed by Wallich (Cat. n. 6386), which is probably the same species. *C. Limonellus* is also described by Miquel, who says that it is cultivated everywhere in the Dutch East Indies.

Curiously enough, whilst Rumph describes the petals as five, he figures invariably four, and this and its other characters indicate his plant being the same as the Rungpore Lime of Bengal, the sixth variety of Roxburgh's *C. acida*, which includes the Sweet and Sour Limes (not the Lemon), characterized as a small bush with a small pinkish flower, usually four petals, and a perfectly spherical fruit, having a thin skin of a lively yellow colour and pale acid juice. Dr. King has had the kindness to send me copies of Roxburgh's drawings of the Limes cultivated by him in the Calcutta Botanical Garden, and they confirm this identification, both as to flower and fruit. This plant is very well figured by Wight as *C. Limetta*, Risso (Icones, t. 958), who says it is certainly wild in the Nilgherry Hills, forming a low erect thorny shrub, with a profusion of fragrant white four-merous flowers; he adds, however, that the juice is "watery acid, sweetish, or occasionally slightly bitter" (a variation not likely to occur in a native plant).

When preparing the "Forest Flora of Central and North-Western India," Dr. Brandis asked me to help him to settle the synonymy of the genus *Citrus*, so that it should be in harmony with the "Flora of British India," and after a long study we concluded that the various forms grouped themselves under three generally recognized species, of which two were indigenous to India, and one had been introduced. The native are *C. medica* (the Citron, Lemon, and Limes), and *C. Aurantium* (the Oranges and the Bergamotte); the third, *C. decumana*, Willd., is assumed to have been derived from Polynesia, and is the Shaddock (Pumalo, Pomplemoes, sometimes called Forbidden Fruit). I think this arrangement holds good, except possibly in the case of the Bergamotte, which has the highly-scented skin of the Oranges, but its pale-coloured skin and subacid juice are those of the Limes.

Turning to the West Indies, which is the great second home of the Lime and the principal area of its cultivation, I find it described by the exact McFadyen as *C. Lima*, McF.,

a thorny shrub with ovate leaves pentamerous white flowers, small nearly globose yellow fruit with thin skin and an abundance of pure acid juice; it is naturalized in Jamaica, forming strong fences:—all characters precisely accordant with Lord Ducie's plant. Grisebach unites with it *C. spinosissima*, Meyer, and refers both to a var. of *C. Aurantium*, L., in which he is certainly mistaken. Brandis alludes to the West Indian Lime, following Grisebach as to its position and synonymy, but adds that the fruit is very much like the small acid Lime of India, and suggests the removing it from under *C. Aurantium*. The *C. spinosissima* of Meyer (printed by a lapsus *aridissima* in Brandis) is no doubt a sub-variety, differing in its very small leaves, flowers, and fruit. Other authors refer the West Indian Lime to *C. Limetta*, Risso, which is its nearest European representative, but which differs in its sweet juice.

The last reference which I have to make is to a woodcut in the "Gardeners' Chronicle" (N.S. vol. v. p. 690, fig. 123) of what appears to be the fruit of this plant, under the name of "the Bijou Lemon," with unfortunately no history attached.

With the exception of this woodcut, I know of no other published figure of the Lime than that here given. It is a favourite fruit in the West Indies and Southern United States, the acid being far more grateful than that of the Lemon; and it is hence universally used for flavouring soups, &c., and in the preparation of many alcoholic and acidulated drinks. In my younger days it was imported in vast quantities into the City of Glasgow, providing an indispensable material for the brewing of the famous Glasgow Punch. That it is now so seldom seen comparatively, is due to the declension of that social and family intercourse that once was so intimate between the great city and the Spanish main. It is still the principal source of citric acid, and is cultivated in the West Indies for its manufacture, especially in Montserrat and Dominica.

Earl Ducie, to whom I am indebted for the specimen figured, informs me that he purchased the plant, and is not aware of its origin; it fruited in January, 1883, and the flowering branch was sent in the following April. Both were very fragrant. Plants at Kew from the Montserrat Estates of Messrs. Sturgess, presented by the firm, have

smaller, more membranous and darker green leaves; others from the same source, grown in Mr. Hanbury's Garden on the Riviera, have ovate-lanceolate long-pointed leaves.—*J. D. H.*

Fig. 1, Flowering branch; 2, transverse section of fruit—*both of the natural sive;* 3, glands of rhind—*enlarged.*

6716.

M.S. del, J.N. Fitch. lith

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Tab. 6746.

DICHOPOGON strictus.

Native of S. East Australia and Tasmania.

Nat. Ord. Liliaceæ.—Tribe Asphodeleæ.

Genus Dichopogon, *Kunth*; (*Benth. et Hook. f. Gen. Pl.* vol. vii. p. 58.)

Dichopogon *strictus*; fibris radicalibus tuberosis, foliis gramineis caule 2–3-pedali brevioribus, bracteis ovatis lanceolatisve acuminatis, floribus solitariis v. 2–3-nis sparsis, perianthio 1–1½ poll. diam. foliolis exterioribus elliptico-oblongis subacutis concavis, interioribus paullo longioribus et duplo latioribus late purpureis obcordatis medio 3-costatis marginibus erosis, antheris brunneo-purpureis, appendicibus oblongis granulatis, capsula erecta.

D. strictus, *Baker in Journ. Linn. Soc.* vol. xv. p. 319 *excl. syn.*; *Benth. Fl. Austral.* vol. vii. p. 58.

Arthropodium strictum, *Br. Prodr.* p. 276; *F. Muell. Fragment.* vol. vii. p. 66.

D. undulatum, *Regel Gartenfl.* vol. ii. t. 37.

A. laxum, *Hook. f. Fl. Tasman.* vol. ii. p. 51, t. 131, *non Sieb.*

A more or less common and very attractive sweet-scented meadow-land, &c., plant over the whole south-east quarter of Australia, from Moreton Bay and the Darling Downs in Queensland, southward through New South Wales to Victoria and Tasmania, and westward to South Australia; nowhere, however, growing in greater luxuriance than in Tasmania, where it flowers in November. The *D. humilis*, Kunth, and probably *D. setosus*, Kunth, are added by authors as synonyms. Of the former I have seen no specimen; of *D. setosus* a specimen so named from the indefatigable Baron Mueller appears of very different habit, having densely matted roots, subulate leaves not two inches long, and a very slender stem with a simple raceme of very few flowers; it is, however, reduced to a synonym by the Baron himself, and no doubt on good grounds. In fact, as with so many petaloid *Liliaceæ*, this is a very variable plant in size, length and breadth of leaves, length and ramification of inflorescence, form and size of bracts,

dimensions, colour, &c., of flower, breadth of inner corolla segments, and length of stamens. *D. undulatum* appears to be a starved specimen. Its only recognized congener is *D. Sieberianus*, Kunth, which has reflexed capsules.

I am indebted to Mr. Lynch, of the Cambridge Botanical Garden, for this beautiful plant, which he first sent in 1882, but it arrived too late, and unfit for figuring. In June, 1883, excellent specimens were received from the same source, and which are here pourtrayed. The scent is that of Heliotrope, but fainter.

DESCR. *Rootstock* stout, creeping and sending forth innumerable stout root-fibres, of which many become tuberous towards the end; tubes a quarter to three-quarters of an inch long, fleshy, ellipsoid, acute at both ends. *Leaves* in the largest forms a foot and a half long by half an inch broad, concave, bright green, grass-like, sheathing at the very base only, nerves faint. *Stem* longer than the leaves, erect, stout or slender. *Raceme* or panicle three to eight inches long; bracts very variable, green or scarious, lowest at the base of a branch often linear-lanceolate and two inches long, those under the flowers linear or lanceolate, short or long; a two-bracteolate flower appears at the forks of the panicle; pedicels in the largest forms one and a half inch long, very slender, erect or inclined in flower, decurved in bud, obscurely jointed beneath the flower. *Perianth* one and a half inch in diameter or less, sometimes only a quarter of an inch, pale or dark purple. *Segments* horizontally spread; outer elliptic oblong, acute, concave; inner rather longer, twice as broad, orbicular or oblong and obcordate, three-nerved down the centre, margins erose. *Stamens* half the length of the perianth, suberect, filaments very short, glabrous; anthers linear, dark purple; appendages oblong, granular. *Ovary* globose, glabrous; style filiform, stigma simple. *Capsule* globose, on an erect or spreading pedicel. *Seeds* compressed, testa black.—*J. D. H.*

Fig. 1, Stamen; 2, pistil; 3, transverse section of ovary:—*all enlarged.*

M.S. del. J.N. Fitch. lith.

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Tab. 6747.

TORENIA Fournieri.

Native of Cochinchina.

Nat. Ord. Scrophularineæ.—Tribe Gratioleæ.

Genus Torenia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 954.)

Torenia *Fournieri*; glaberrima, ramis suberectis, foliis longiuscule petiolatis ovato-cordatis acutis serratis, floribus axillaribus et in racemos terminales dispositis, pedicellis suberectis foliis multo brevioribus, calycibus ellipsoideis ovatisve late alatis breviter 5-dentatis, corollæ tubo calyce subduplo longiore, limbi ampli labio superiore latiore quam longo pallide lilacino, inferioris lobis rotundatis læte violaceis intermedio basi aureo, filamentis omnibus inappendiculatis.

T. Fournieri, *Lind.*; *Fournier in Ill. Hortic.* vol. xxiii. t. 249; *Charton in Rev. Hortic.* 1876, p. 465, *cum Ic. xylog.*; *Regel, Gartenfl.* t. 927; *Morren, Belgique Hortic.* 1879, t. 1.

Torenia Fournieri, which is the most beautiful species of the genus hitherto introduced into cultivation, has been often confounded with *T. asiatica* (Plate 4249), from which it differs wholly in the terminal and more or less racemose inflorescence, as well as in the form of the calyx and much brighter colour of the corolla. It belongs, indeed, to another section of the genus, which I established in the Flora of British India (vol. iii. p. 278), distinguished by the inflorescence, and to which *T. flava* (Bot. Mag., tab. 6700) belongs, together with the *T. ciliata* of Penang, a species not hitherto brought into cultivation, and evidently closely allied to *T. Fournieri*. The genus is an Asiatic one, and other species figured in this work are *T. cordifolia*, tab. 3715; *T. peduncularis*, tab. 4229; *T. asiatica* and *T. flava*, mentioned above. From all these, and probably from all others of the genus, *T. Fournieri* differs, in having no tooth at the base of the longer filaments.

T. Fournieri was introduced by Mr. Linden from seed sent from Mr. Godefroy from Cochinchina, and is now a well-established favourite in warm greenhouses and stoves, flowering throughout the summer months.

April 1st, 1884.

Descr. Quite glabrous. *Branches* numerous from the root, crowded, ascending and erect, four-angled, leafy, four to eight inches high, much branched. *Leaves* one and a half to two inches long, ovate or ovate-cordate, acute, serrate, bright green; petiole stout, more than half as long as the blade. *Flowers* in the upper axils, and forming terminal erect racemes; pedicels opposite, erect, stout, half to three-quarters of an inch long; bracts minute, subulate. *Calyx* three-quarters of an inch long, ovoid or ellipsoid, acute, rather inflated, broadly five-winged, green; wings thin, obscurely ciliate; teeth very small, subulate, erect, conniving in fruit. *Corolla-tube* one inch long, pale violet, yellow posteriorly, puberulous; limb one and a half inch in diameter; upper lip an inch broad, broader than long, pale lilac, upper margin rounded, obscurely two-lobed; lower lip of three much smaller bright violet rounded lobes, the central one with a golden blotch at the base. *Filaments* all quite simple, without appendage or tooth. *Disk* cup-shaped. *Ovary* lanceolate, puberulous; stigmatic lobes small.—*J. D. H.*

Fig. 1, Corolla laid open; 2 and 3, front and back view of anthers; 4, disk and ovary:—*all enlarged.*

M.S.del. et lith.

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Tab. 6748.

OXALIS articulata.

Native of South Brazil and La Plata.

Nat. Ord. Geraniaceæ.—Tribe Oxalideæ.

Genus Oxalis, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 276.)

Oxalis *articulata*; patentim pilosa, rhizomate crasso deformi ramoso, foliis longe petiolatis 3-foliolatis, foliolis obcordatis marginibus rubellis, pedunculis foliis longioribus, umbellis multifloris glanduloso-pubescentibus, floribus longe pedicellatis pallide purpureis, sepalis lineari-oblongis dorso apices versus rubro-callosis, petalis cuneato-obovatis recurvis, filamentis pubescentibus 5 stylis longioribus 5 illis brevioribus, antheris parvis didymis, ovario pubescente, stylis **brevibus erectis, stigmatibus capitatis.**

O. articulata, *Savigny in Lamk. Dict.* vol. iv. p. 686; *DC. Prodr.* vol. i. p. 695 (*excl. flor. color.*); *St. Hilaire Fl. Bras. Merid.* vol. i. p. 124.

This is one of a large group of sorrels which inhabit the temperate regions of South America, and are distinguished by their stout perennial woody rootstocks. It has been collected in South Brazil by Sellow, in Monte Video by Isabelle and G. Lorenz, and at Bahia Blanca, on the coast of Patagonia, by Darwin. It derives its specific name from the nature of the branched rootstock, which gives off tuberous annulate branches, contracted at the base, as shown in our plate. The flowers are erroneously described as yellow in De Candolle's Prodromus.

O. articulata was one of the fine collection of Oxales formed by the late Giles Munby, Esq., and which was, after his death in 1876, presented to Kew by his family. It is kept in a cool greenhouse, is sweet-scented, and flowers in July.

Descr. *Rootstock* 2 to 3 inches high, very stout, deformed, woody, clothed with brown bark, giving off short rounded branches, marked transversely by close-set ridges; leaves, scapes, and inflorescence pubescent, with lax soft spreading hairs. *Leaves* three-foliolate; leaflets three-quarters to one inch long, broadly obcordate, bright green with red

margins; petiole very slender, three to four inches long. *Scape* very slender, longer than the petioles, many-flowered; bracts very small; pedicels slender, one to two inches long, and, as well as the calyx, more or less glandular-pubescent. *Sepals* one-fourth of an inch long, linear-oblong, acute, with a red callus on the back beneath the tip. *Corolla* pale lilac, one inch in diameter or less; petals obovate-spathulate, very broad at the rounded tip, spreading and recurved. *Staminal tube* glabrous, filaments pubescent, the shorter ones not half the length of the styles, the longer four times as long; anthers small, didymous. *Ovary* elongate, pubescent; styles short, sub-erect, subulate, pubescent, shorter than the cells, stigmas capitate.—*J. D. H.*

Fig. 1, Flower with the petals removed; 2, sepal; 3 and 4, anthers; 5, staminal column and styles; 6, ovary :—*all enlarged.*

A.B. del. J.N. Fitch lith.

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Tab. 6749.

COFFEA TRAVANCORENSIS.

Native of Southern India and Ceylon.

Nat. Ord. Rubiaceæ.—Tribe Ixoreæ.

Genus Coffea, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 114.)

Coffea *travancorensis*; frutex glaber, foliosus, foliis subsessilibus ellipticis ovatis lanceolatisve subacutis v. obtusis rarius obtuse- v. acute caudato-acuminatis membranaceis v. tenuiter coriaceis, stipulis brevissimis triangularibus, floribus foliis coetaneis 3–4-nis 5-meris, calycis tubo brevi, limbo truncato, corollæ tubo gracili ½-pollicari, limbi lobis brevioribus ovatis obtusis, fructu late didymo.

C. travancorensis, *Wight et Arn. Prodr.* p. 434; *Wall. Cat.* n. 6245; *Thwaites Enum. Pl. Zeyl.* p. 154; *Hook.f. Fl. Brit. Ind.* vol. iii. p. 154.

C. triflora, *Moon Cat. Pl. Ceyl.* p. 15.

A small South Indian species of *Coffea*, allied to the *C. bengalensis* (tab. 4917), but with a very much smaller flower and different calyx, more resembling in these respects the true Coffea, *C. arabica* (tab. 1303), which has larger leaves and exserted stamens and style. It is a very variable plant, especially in the foliage, the leaves in some specimens from Malabar being lanceolate, very membranous, and much more acuminate. I am not aware that the seed has been used as coffee, as that of *C. bengalensis* has been, though it is very probable that owing to its small size it would hardly be worth cultivation on an extensive scale. The flowers are sweet-scented, as in the majority of the genus.

The plant was raised from seed received from Colonel Beddome, and flowered in the Royal Gardens in August of last year. The flowers are probably dimorphic, judging from the reduced style and imperfect stigma of the specimen here figured.

Descr. A bushy shrub, three to six feet high, copiously leafy. *Branches* slender, obscurely quadrangular, tips obscurely puberulous, bark brown. *Leaves* three to four inches long, very variable in shape from broadly ovate to

lanceolate, obtuse, acute, or drawn out into a long obtuse or acute point, membranous or thinly coriaceous; stipules very small, triangular. *Flowers* solitary or three to four together in the axils of the leaves, shortly pedicelled, erect, minutely bracteolate under the calyx, white, sweet-scented. *Calyx* very small, tube cylindric, puberulous, truncate or minutely five-toothed. *Corolla* white, tube three-quarters of an inch to one inch long, very slender; limb two-thirds of an inch to one inch in diameter, lobes ovate or lanceolate obtuse. *Anthers* included, linear, sessile, their tips only exserted.—*J. D. H.*

Fig. 1, Flower cut longitudinally; 2, stamens; 3, imperfect stigma; 4, bracts and ovary; 5, transverse section of ovary:—*all enlarged.*

Tab. 6750.

ACANTHOMINTHA ILICIFOLIA.

Native of Lower California.

Nat. Ord. Labiatæ.—Tribe Satureineæ.

Genus Acanthomintha, *A. Gray;* (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1192.)

Acanthomintha *ilicifolia;* herba annua, fere glaberrima, a basi ramosa, ramis foliosis, foliis petiolatis rotundatis v. ovato-cuneatis grosse crenato-dentatis, verticillastris paucifloris, bracteis oppositis foliis majoribus sessilibus orbiculatis rigidis marginibus callosis longe spinoso-dentatis reticulatis, floribus puberulis.

A. ilicifolia, *A. Gray Synopt. Fl. N. Am.* vol. ii. pt. i. p. 365.

Calamintha? § Acanthomintha ilicifolia, *A. Gray in Proc. Amer. Acad.* vol. viii. p. 368.

A singular little plant, with much the habit of a small *Lamium*, and faintly aromatic smell, but nearer to *Calamintha*, to which genus it was originally doubtfully referred by its author. Its nearest ally is, according to Dr. Gray, the Brazilian genus *Glechon*, of which there are a good many species; both differ from the characters of the tribe to which they are referred (*Satureineæ*) in the hooded upper lip of the corolla.

A. ilicifolia is a native of the St. Diego country of California, bordering on Mexico. The specimen figured was raised from seeds sent by Mr. Wright, of St. Diego, which flowered in July of last year in the open border. The chief interest of the plant is botanical, as being a monotypic genus, the affinities of which are with a genus of far-distant tropical Brazil.

Descr. A small annual, with a faint aromatic smell, nearly glabrous, branching from the root; branches spreading and ascending, six to eight inches long, leafy throughout. *Leaves* petioled, half to one inch long, rounded or ovate with a cuneate base, coarsely bluntly toothed, base narrowed into a petiole shorter than the blade. *Flowers* three to eight in a whorl, in all the upper axils; whorls subtended by a pair of opposite bracts, which

are larger than the leaves, sessile, orbicular, coriaceous, finely reticulated, puberulous, with thickened margins and long spinous diverging teeth. *Calyx* tubular, pubescent, two-lipped, tube thirteen-ribbed; teeth triangular-lanceolate, acuminate; throat sparsely villous. *Corolla* half an inch long; tube slender, twice as long as the calyx; upper lip small, oblong, obtuse, concave, white; lower broad, purple with a yellow throat, four-lobed, lobes rounded, the lateral broadest. *Stamens* inserted in the corolla-throat; fertile two, filaments stout glabrous; anthers didymous; staminodes small, filiform, capitellate. *Disk* very large, shortly columnar. *Style* very slender, glabrous; stigmatic arms shortly filiform.—*J. D. H.*

Fig. 1, Bract; 2, flower; 3, portion of corolla and stamens; 4, disk and ovary; 5, disk and carpels :—*all enlarged.*

M.S. del. J.N. Fitch, lith.

Vincent Brooks Day & Son Imp.

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TAB. 6751.

LABICHEA LANCEOLATA.

Native of South-Western Australia.

Nat. Ord. LEGUMINOSÆ.—Tribe CASSIEÆ.

Genus LABICHEA, *Gaud.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 573.)

LABICHEA *lanceolata*; frutex erectus, glaberrimus, foliis 1–3-foliolatis subsessilibus, foliolis lineari-oblongis linearibusve utrinque acuminatis apice pungentibus coriaceis nitidis, racemis axillaribus foliosis, sepalis 4–5 oblongis, petalis 4 sepalis duplo majoribus rotundatis aureis, anthera majore corniforme minore lineari-oblonga duplo majore, ovario stipitato villoso-sericeo.

L lanceolata, *Benth. Enum. Pl. Hueg.* p. 41; *Fl. Austral.* vol. ii. p. 293.

L. diversifolia, *Meissn. in Pl. Preiss.* vol. i. p. 23; *Lindl. et Paxt. Fl. Gard.* t. 52.

L. bipunctata, *Paxt. Mag.* vol. x. p. 150, *cum Ic.*

Labichea is an Australian genus closely allied to *Cassia*, but differing remarkably in having only two stamens, and these being often very dissimilar; only five species are known, and of these the present alone has been brought into cultivation. The genus was named by M. Gaudichaud, the naturalist attached to the expedition, in memory of an officer (M. Labiche) of the "Uranie," a French frigate, which was sent on an exploring voyage under the command of Captain Freycinet. *L. lanceolata* is one of the many beautiful Western Australian plants that were introduced shortly after the colonization of Perth and the Swan River Settlement, chiefly through the exertions of the late Captain Mangles. Of these plants, which were once almost the rage, the *Rhodanthe Manglesii* is now one of the few remaining that is common in greenhouse or conservatory; the rest have for the most part been watered to death, having been treated like Geraniums and other "greenhouse stuff."

L. lanceolata is apparently a widely distributed species, being found from the Murchison River, on the west coast, in lat. 27½° S., to Swan River, lat. 35° S., on the south

coast, a distance of nearly 500 miles. It forms a charming little shrub, with its glossy bright green leaves and golden flowers. Its reintroduction is due to the persistent energy of our friend Baron Mueller, who, though with no garden at his command, continues his contribution of seeds and living plants to Kew, and who procured the seeds of this from Champion Bay in 1880; the plants raised from these seeds flowered in May, 1883. It was, however, cultivated by Messrs. Low, of Clapton, so long ago as 1840.

DESCR. A glabrous shrub, six to eight feet high, with erect twiggy branches. *Leaves* three-foliolate or reduced to a single leaflet, sessile; leaflets coriaceous, middle one two to four inches long, narrowly linear-oblong or elliptic-lanceolate, acute at both ends, margins thickened, midrib very stout, ending in an exserted pungent point; nervation finely reticulate; smaller leaflets a quarter to one inch long, sometimes absent. *Flowers* three-quarters of an inch in diameter, in shortly peduncled axillary racemes two to four inches long; pedicels slender. *Sepals* five or four, the two posterior being united, linear-oblong, concave, puberulous. *Petals* orbicular, margins erose, golden yellow, the posterior with two bright red blotches at the base. *Stamens* two, filaments very short; anther of the larger stamens horn-like, the cells one-third the length of the tubular curved upper portion, which is obtuse, with a small transverse subterminal pore; smaller anthers linear, curved, with a similar pore. *Ovary* pedicelled, ellipsoid, villously silky; style slender, as long as the cell. *Pod* one to one and a half inch long, pedicelled, obliquely oblong, acute, one- to three-seeded. *Seeds* small, brown, shortly oblong; funicle swollen in the middle.—*J. D. H.*

Fig. 1, Calyx, stamens, and ovary; 2 and 3 longer, and 4 and 5, shorter anthers; 6, ovary; 7, pod; 8, portion of pod and young seed:—*all but fig. 7 enlarged.*

A.B. del J.N.Fitch lith.

Vincent Brooks Day & Son Imp.

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Tab. 6752.

LEIOPHYLLUM BUXIFOLIUM.

Native of the United States.

Nat. Ord. Ericaceæ.—Tribe Rhodoreæ.

Genus Leiophyllum, *Pers.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 597.)

Leiophyllum *buxifolium*; fruticulus glaberrimus, humilis, ramosissimus, ramis foliosis, foliis parvis breviter petiolatis oppositis alternisque ovatis v. oblongis integerrimis obtusis crasse coriaceis, floribus parvis in corymbos terminales dispositis albis, pedicellis gracilibus, alabastris roseis.

L. buxifolium, *Elliott Sketch Bot. Carolin.* vol. i. p. 483; *Ait. Hort. Kew.* ed. 2, vol. iii. p. 48; *DC. Prodr.* vol. vii. p. 730; *A. Gray Man. Bot. N. U. States*, ed. 5, p. 301; *Goodale, Wild Flowers of America*, t. 49.

L. thymifolium, *G. Don Gen. Syst.* p. 851.

L. serpyllifolium, *DC. l. c.*

L. prostratum, *Loud. Arboret.* p. 1155.

Ledum buxifolium, *Berg in Act. Petrop.* 1777, p. 1, t. 3, f. 2.

L. thymifolium, *Lamk. Dict.* vol. iii. p. 459; *Ill.* t. 363, f. 2.

Dendrium buxifolium, *Desv. Journ. Bot.* vol. i. p. 36.

Fischera buxifolia, *Swartz in Mem. Soc. Imp. Nat. Mosc.* vol. xiv. t. 1.

Ammyrrine buxifolia, *Pursh. Fl. Am. Sept.* vol. i. p. 301; *Lindl. Bot. Reg.* t. 531.

A. prostrata, *Sweet Hort. Brit.* ed. 1.

A. Lyoni, *Sweet l. c.* ed. 1830, p. 344.

The subject of this plate is burthened with a complicated synonymy, partly because several generic names were proposed for it at no distant intervals, and partly because it inhabits two widely distant and dissimilar localities, whence it was inferred that the species from each must be different. It is certainly singular that a plant should be common in the sandy pine barrens of New Jersey and the mountain tops of Virginia, and found in no intermediate locality; but such appears to be the case. It is an exceedingly pretty little shrub, closely allied to *Ledum*, and known in the United States as the "Sand Myrtle." It was introduced into England so long ago as 1736 by Peter Collinson, F.R.S., the Quaker and Linendraper, who was the chief encourager

of Gardens and Plantations of his day, and whose gardens were first at Peckham and latterly near Hendon.

L. buxifolium has long been cultivated at Kew, where it flowers in May and June. The specimen here figured was presented by Messrs. Little and Ballantyne, of Carlisle.

Descr. A small rigid bush twelve to eighteen inches high, much branched, and copiously leafy. *Leaves* opposite and alternate, spreading and recurved, shortly petioled, about half an inch long, thickly coriaceous, ovate or obovate, obtuse, quite entire. *Flowers* very numerous, about a quarter of an inch in diameter, in crowded terminal umbelliform corymbs, white with pink tips and backs to the petals; pedicels half an inch long, very slender, with minute bracts at their base. *Sepals* lanceolate, acuminate. *Petals* nearly twice as long as the sepals, elliptic, subacute, concave, spreading. *Stamens* ten, filaments very slender, five of them as long as the petals, five longer; anthers small, red-brown, opening by slits. *Disk* crenate. *Ovary* ovoid, glandular; style short; stigma simple.—*J. D. H.*

Fig. 1, Front, and 2, back view of flower; 3, flower cut open vertically; 4, calyx and ovary; 5, anthers; 6, stigma; 7, transverse section of ovary:—*all enlarged.*

3.

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Tab. 6753.

ABIES religiosa.

Native of Mexico.

Nat. Ord. Coniferæ.—Tribe Abietineæ.

Genus Abies, *Juss.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 441.)

Abies *religiosa;* ramis pendulis ultimis hirtellis, foliis ramo undique laxe insertis sub-bifariis patentibus anguste linearibus rectis v. curvulis planiusculis obtusis v. acutis basi tortis pulvinis parvis facie superiore leviter sulcatis viridibus, inferiore utrinque costæ fascia pallida notatis, strobilis masculis oblongis v. oblongo-cylindraceis obtusis folio subduplo brevioribus, fœmineis maturis sessilibus 4–6-pollicaribus oblongo-cylindraceis obtusis violaceis, squamis vix unguiculatis late obovato-spathulatis glabris marginibus integris puberulis, bracteis late oblanceolatis apicibus triangularibus acutis exsertis crasse costatis recurvis, seminibus cum alis oblique obovatis nucleo angusto.

A. religiosa, *Schlecht. in Linnæa*, vol. v. p. 77; *Lindl. in Penny Cyclop.* vol. i. p. 6; *Carriere Conif.* p. 202; *Hemsley Biolog. Centr. Amer.* vol. iii. p. 190; *M'Nab in Proc. R. Irish Acad.* ser. 2, vol. ii. p. 676, t. 46, f. 2.

A. hirtella, *Lindl. l. c.*

Picea religiosa, *Loud. Arboret.* vol. iv. p. 2349, f. 2257; *Gord. Pinet.* p. 153, ed. 2, p. 212.

P. glaucescens, *Gord. Pin.* ed. 1, p. 149.

Pinus religiosa, *H. B. et K. Nov. Gen. et Sp.* vol. ii. p. 5; *Lamb. Pin.* ed. 3, p. 76, t. 43; *Antoine Conif.* p. 75, t. 28, f. 2; *Endlich. Cenif.* p. 92; *Parlator. in DC. Prodr.* vol. xvi. p. 420.

P. hirtella, *H. B. et K. l. c.*; *Antoine l. c.* p. 80; *Endlich. l. c.* p. 93.

Apparently a widely distributed Silver Fir in the mountain forests of Mexico, at elevations of 8000 to 10,000 feet, but descending to 4000 in some places. It is a very handsome umbrageous species, with longer branches and a more pendulous habit than its northern allies, either American, as *A. nobilis*, *grandis*, *lasiocarpa*, &c.; or European, as *A. pectinata*. It is, unfortunately, tender in this country, fine specimens being only to be seen in the southern and western counties and in Ireland. That from which the specimen here figured was procured forms a singularly handsome tree in the superb collection of Coniferæ at Fota Island, Cork, the well-known seat of

A. H. Smith Barry, Esq., to whom I am indebted for sending it to Kew for identification. Dr. M'Nab places *A. religiosa* next to *A. bracteata*, considering it very closely related, an opinion I cannot subscribe to; for in habit, form and nature of the buds foliage and bracts, they seem to me to be very different indeed. In all these respects *A. religiosa* approaches nearer to *A. nobilis*, in the cones especially. Gordon describes as a var. *A. glaucescens*, Roezel, with leaves silvery on both surfaces, so as to make the trees appear as if snowed upon. The name *religiosa* is in allusion to the branches being used in the decoration of churches in Mexico.

Descr. A tree attaining 150 feet high, with a trunk five to six feet in diameter, a sparse habit, and long spreading branches with drooping hairy branchlets. *Leaves* one to one and a half inch long by one-twelfth to one-tenth of an inch broad, inserted loosely all round the branches, but chiefly pointing bifariously, widely spreading, curved, acute or obtuse, exactly linear, base with a half-twist; upper surface deep green, obscurely channelled, lower with a pale glaucous band of stomata on each side of the midrib. *Cone* erect, four to six inches long, sessile, cylindric-oblong, tip rounded, two to two and a half inches in diameter, dark violet blue. *Bracts* with triangular exserted recurved tips. *Scales* very numerous, broadly obovate-spathulate, sessile; broad end thin, rounded, obscurely puberulous. *Seeds*, including the wing, obliquely obovate, nearly as long as the scale, nucleus narrow.—*J. D. H.*

Fig. 1, and 2, Leaves; 3, transverse section of leaf; 4, dorsal view of scale and bract; 5, scale and seeds :— ***all enlarged.***

Tab. 6754.

TULIPA Kesselringii.

Native of Turkistan.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Tulipa, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 818.)

Tulipa *Kesselringii*; bulbo globoso tunicis exterioribus intus parce strigosis, foliis 4–5 lorato-lanceolatis glabris suberectis facie canaliculatis, pedunculo elongato glabro, perianthii lutei campanulati magnitudine mediocris segmentis interioribus obovato-oblongis subobtusis exterioribus oblongis acutis dorso rubro-viridulis, staminibus perianthio 2–3-plo brevioribus, antheris filamento glabro subæquilongis, stigmatibus parvulis.

T. Kesselringii, *Regel Gartenfl.* vol. xxviii. (1879), p. 34, t. 964; *Baker in Gard. Chron.* 1883, part 1, p. 789.

T. Hoeltzeri, *Hort. Petrop.*

This is another of the new Tulips which have been discovered recently in Central Asia. It was drawn from specimens supplied by Mr. Elwes last April, and was received by him from Dr. Regel, under the unpublished name of *Tulipa Hoeltzeri*. It appears to me quite identical with the plant which has been figured and described as *Tulipa Kesselringii*, which was sent to Europe from the mountains of Turkistan by Dr. Albert Regel about 1878, and was named by Dr. Regel after his son-in-law, Herr J. Kesselring. We do not possess any wild examples of of the plant. It falls into the group *Gesnerianæ*, by the side *T. Didieri*, Bot. Mag. t. 6639, and *T. Kolpakowskiana*, Bot. Mag. t. 6718, but in habit and flower-colouring at first sight it recalls far more strongly the Greek *T. Orphanidea*, Bot. Mag. t. 6310, the finest specific type of the *Sylvestris* group. We have also had it in cultivation at Kew, and it appears to be perfectly hardy.

Descr. *Bulb* middle-sized, globose, outer tunics dark brown, slightly strigose on the inner face. *Leaves* lorate-lanceolate, four or five crowded together at the base of the stem, suberect, half a foot long, slightly glaucous,

channelled down the face, quite glabrous on the surfaces and margin. *Peduncle* terete, glabrous, four to eight inches long. *Perianth* campanulate, bright yellow, one and a half or two inches long; inner segments obovate-oblong, subobtuse, half an inch broad a little above the middle; outer oblong, acute, flushed with red and green on the back. *Stamens* bright yellow, less than half as long as the perianth; anthers obtuse, a quarter of an inch long, about equalling the filaments. *Stigmas* not quite equalling the ovary in diameter.—*J. G. Baker.*

Fig. 1, Front view of a stamen; 2, back view of a stamen; 3, pistil:—*all much enlarged.*

M.S. del. J.N. Fitch lith.

Vincent Brooks Day & Son Imp

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Tab. 6755.

SAGITTARIA montevidensis.

Native of South America.

Nat. Ord. Alismaceæ.—Tribe Alismeæ.

Genus Sagittaria, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 1006.)

Sagittaria *montevidensis;* elata, foliis sagittatis polymorphis, scapo fœmineo valido, verticillis approximatis, bracteis lanceolatis parvis, pedicellis masc. elongatis gracilibus, fœm. brevibus crassis fructiferis recurvis, floribus amplis, sepalis oblongis, petalis magnis cuneato-orbiculatis niveis plaga basilari purpurea aureo cincta notatis, filamentis brevibus papillosis, antheris oblongis, acheniis numerosissimis densissime congestis cuneatis compressis eglandulosis, stylo elongato-subulato.

S. montevidensis, *Cham. et Schlecht. in Linnæa*, vol. ii. p. 156; *Kunth Enum.* vol. iii. p. 157; *Seubert in Mart. Fl. Bras. fasc.* viii. p. 110; *Micheli in A. DC. Monog. Phanerog.* vol. iii. p. 75.

S. chilensis, *Cham. et Schlecht. l. c.*

One of the most beautiful water-plants, other than water-lilies, that has been introduced into the tropical aquarium of Kew since its establishment, and a very free grower and flowerer. Nothing can exceed the snowy whiteness of the flowers, which are produced in succession, relieved as they are by the rich maroon blotches, bordered with pale gold, at the base of each petal. Like so many other water-plants, it has a wide range of geographical distribution, namely, from Jamaica to Monte Video on the River Plate, and from Lima in Peru to Valdivia in Chili. Tweedy, who found it near Buenos Ayres, describes it as most abundant in the marshes of La Plata, forming great bushes five feet high. Specimens in the Kew Herbarium, collected by M. Gibert in Uruguay, have the rachis of the female panicle much thicker than the thumb, and leaves a foot in diameter. The leaves are exceedingly variable in breadth, and in the shape and divergence of the always long basal lobes; in the specimen figured the leaf is three times as long as broad, with the auricles narrow and parallel; in the extreme opposite form the leaf is twice as broad as long,

measuring six inches across the triangular auricles which diverge at right angles.

The seeds of this lovely plant, collected at Buenos Ayres, were brought to Kew by John Ball, Esq., F.R.S., early in 1883, and the plants raised therefrom flowered in June of the same year.

DESCR. *Rootstock* tuberous. *Leaves* numerous; petiole two to three feet long, stout, subcylindric, tapering upwards; blade hastate, with the lobes as long or longer than the upper portion, from narrowly oblong to deltoid, many-nerved, acute or finely acuminate, basal lobes narrow and parallel or triangular and diverging. MALE PEDUNCLE two to three feet high, slender; panicle a foot long, with many whorls of six to eight flowers in a whorl; bracts ovate-lanceolate, acuminate, one-third to one-half of an inch long, green; pedicels one to two inches long, decurved after flowering. *Sepals* half an inch long, oblong, concave, obtuse, green. *Petals* one to one and a half inches broad, broader than long, rounded with a subcuneate base, pure white with a large marroon spot at the base bordered with yellow. *Stamens* numerous, surrounding a small head of abortive ovaries, filaments short papillose. FEMALE PEDUNCLE much stouter, with much shorter pedicels and usually broader bracts. *Perianth* as in the male. *Ovaries* in a globose green head, ovate, compressed, glabrous; style subterminal. *Achenes* most densely packed in a depressed globose head almost an inch in diameter, dull green, cuneate, with an elongate-subulate style projecting laterally from the inner angle, glabrous, eglandular.—*J. D. H.*

Fig. 1, Head of stamen; 2 and 3, young stamens; 4, abortive ovaries from the male flower; 5, a single achene from the same; 6, head of ripe achenes; 7, achenes; 8, achene cut open; 9, seed:—*all enlarged.*

A.E. del, J.N. Fitch, lith

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Tab. 6756.

SOLANUM Maglia.

Native of Chili.

Nat. Ord. Solanaceæ.—Tribe Solaneæ.

Genus Solanum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 888.)

Solanum *Maglia*; herbaceum, inerme, puberulum, rhizomate tuberifero, caule erecto ramoso alato, foliis pinnatis, foliolis 5–7 majoribus late ovatis oblongisve basi rotundatis v. cordatis lateralibus petiolulatis, minoribus interjectis parvis v. 0, infimis stipulæformibus, cymis compositis longe pedunculatis, pedicellis medio articulatis, calycis hispidi lobis ovato-lanceolatis tubo longioribus, corolla rotata lobis brevibus deltoideis, filamentis brevissimis, stylo elongato.

S. Maglia, *Schlecht. Hort. Hal.* vol. i. p. 6; *Dunal in DC. Prodr.* vol. xiii. pt. 1, p. 33; *Baker in Journ. Linn. Soc.* vol. xxi. *ined.*

S. tuberosum, *Sabine in Trans. Hort. Soc.* vol. v. p. 240, t. 9, f. 2 et 11.

The plate opposite to this description represents characteristically the plant tubers of which were sent by Mr. Alexander Caldcleugh from Chili to the Royal Horticultural Society in 1822 as those of the true wild Potato, and which was afterwards found by Darwin in the Chonos Archipelago, and mentioned in his narrative of "The Voyage of the Beagle." The history of both these discoveries is well known; Mr. Caldcleugh's tubers were cultivated in manured soil at the Horticultural Society's Gardens, where two plants yielded about 600 tubers of the size of a pigeon's egg and under, which had when boiled the flavour of a common potato. This plant and its tubers were fully described by Sabine in the Society's Transactions. Darwin describes his tubers as oval, two inches in diameter, and as exactly resembling in smell and shape the common potato, but they shrunk and proved watery and insipid when boiled. Tubers of the same species were given to Kew in 1862 by Dr. Sclater, F.R.S.; these were grown in the sandy soil of the pleasure grounds without manure. They bore no tubers in 1863 or 1864, but have since, and the plate here given represents these, its cultivation having been continued up to this time.

May 1st, 1884.

Nevertheless it would appear to be established by Mr. Baker's researches that *S. Maglia*, which is invariably a coast plant, is not the origin of the Potato, which must be sought in the very closely allied *S. tuberosum*, a native of the Andes of Chili and Peru. I must refer the reader to Mr. Baker's valuable paper on the tuber-bearing species of Solanum, in the twenty-first volume of the Journal of the Linnæan Society, for a full account of *S. Maglia* and its allies. These extend northward to New Mexico, where *S. Jamesii* and *Fendleri* are found, and both of which have lately been brought into cultivation.

Experiments are now being carried out under the auspices of the Royal Agricultural Society to improve the qualities of the Potato, especially as to its power of resisting attacks of the Potato disease, by crossing *S. tuberosum* with its allies, and amongst them with *S. Maglia*, which it is proposed to distinguish in future by the name of the "Darwin Potato."

As above stated, the drawing here given was made from plants raised from the original tubers given to the Royal Gardens by Dr. Sclater in 1862, which flower freely every autumn, and yield watery scarcely edible potatoes.

Descr. Nearly glabrous or sparsely pubescent. *Tubers* subglobose or oblong, the largest one to one and a half inches long in longest diameter, surface smooth, red brown. *Stem* two feet high, erect, stout, branched, angled and winged. *Leaves* four to eight inches long; leaflets five to seven, the larger two to three inches long, ovate or oblong, acute, waved, lateral petiolulate, base oblique, rounded or cordate; basal leaflets small, stipuliform; intermediate small leaflets few or none. *Cymes* compound, many-flowered, pedicels slender. *Flowers* white, one inch in diameter. *Calyx* hirsute; lobes ovate-lanceolate, acuminate, longer than the tube. *Corolla* rotate; lobes short, broadly deltoid, subacute. *Filaments* very short; anthers orange-yellow, linear-oblong. *Style* twice as long as the stamens.—*J. D. H.*

Fig. 1, Flower cut open; 2, stamens; 3, top of style and stigma; 4, transverse section of ovary; 5, tubers:—*all but fig.* 5 *enlarged.*

M.S. del. J.N. Fitch lith.

Vincent Brooks Day & Son Imp

Tab. 6757.

TILLANDSIA STREPTOPHYLLA.

Native of Mexico and Honduras.

Nat. Ord. Bromeliaceæ.—Tribe Tillandsieæ.

Genus Tillandsia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 669.)

Tillandsia (Platystachys) *streptophylla*; foliis dense rosulatis lineari-lanceolatis acuminatis insigniter spiraliter tortis semipedalibus et ultra utrinque dense persistenter albo-lepidotis basibus oblongis erectis ventricosis, pedunculo brevi foliis bracteiformibus rubellis imbricatis apicibus squarrosis, spicis pluribus densis distichis, bracteis oblongo-lanceolatis navicularibus lepidotis valde imbricatis, calyce incluso glabro, petalis lilacinis angustis calyce triplo longioribus, genitalibus exsertis.

T. streptophylla, *Schweid. in Hortic. Belg.* 1836, vol. iii. p. 252, *cum icone*; *Schlecht. in Linnæa*, vol. xviii. p. 427; *E. Morren in Belg. Hort.* 1878, p. 296, t. 18, 19; *Hemsley in Biol. Cent. Amer. Bot.* vol. iii. p. 322.

T. circinnata, *Schlecht. in Linnæa*, vol. xviii. p. 430.

T. tortilis, *A. Brong. MSS.*

Vriesea streptophylla, *E. Morren Cat. Bromel.* 1873, p. 17.

This Bromeliad, from its remarkable habit, is quite a botanical curiosity. Like its neighbours, it grows on old trunks of trees. The bases of the leaves form a large pitcher round the base of the stem, and from this rise their long tapering leathery blades, which are rolled up spirally, and twisted in all directions in the most irregular fashion. The spikes and individual flowers do not show any striking difference from some of the best-known West Indian representatives of this large genus, such as *T. polystachya* and *T. fasciculata*. There is a specimen at the British Museum, gathered in the Mosquito territory as long ago as 1744 by Captain Miller, but it was not described and named till a century later. It has long been cultivated sparingly as a curiosity in the Belgian, English, and French conservatories, and it has been found wild in Mexico by Schiede, Bourgeau, and Hahn.

Our drawing was made from a plant that flowered at Kew last April.

May 1st, 1884.

Descr. Whole plant a foot or a foot and a half long. *Leaves* in a dense basal rosette, their rigid ventricose erect dilated base two or three inches long and broad; blade six or nine inches long, an inch broad at the base, tapering gradually to a long point, very much twisted spirally from low down, firm in texture, densely lepidote on both surfaces. *Peduncle* short, quite hidden by its numerous amplexicaul red-tinted lepidote imbricated bract-like leaves, with short free linear recurving tips. *Spikes* four to eight in a short panicle, distichous, three or four inches long, under an inch broad; bracts oblong-lanceolate, much imbricated, densely lepidote. *Calyx* half an inch long, hidden by the amplexicaul bract, glabrous, cut down nearly to the base. *Corolla* cylindrical, bright lilac, an inch and a half long. *Stamens* exserted. *Style-branches* overtopping the stamens, short, twisted spirally, flattened towards the tip. *Capsule* an inch and a half long.—*J. G. Baker.*

Fig. 1, Lepidote scale from a leaf:—*much enlarged;* 2, a flower complete except the calyx:—*life size;* 3, front view of an anther; 4, back view of an anther; 5, pistil:—***all more or less enlarged.***

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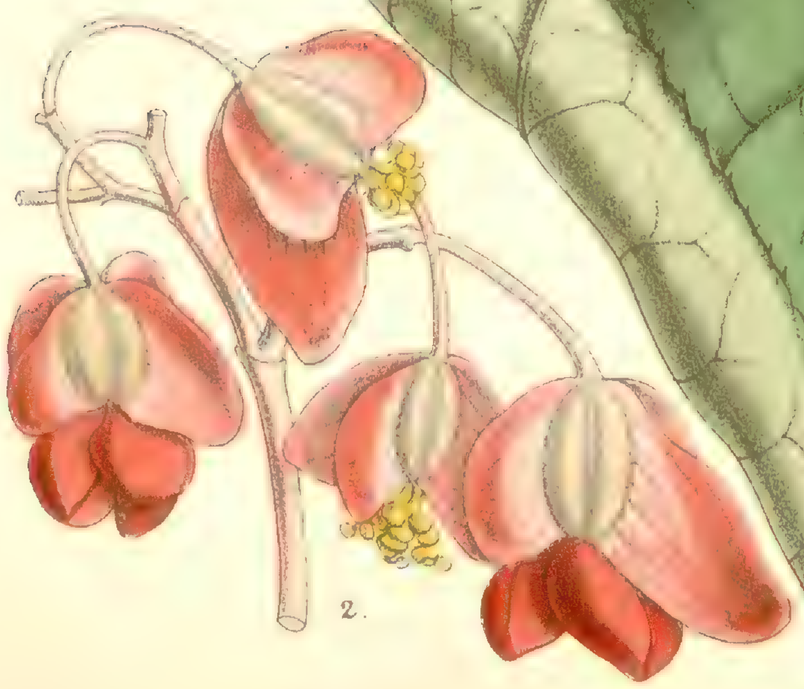

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M S del J N Fitch lith

Vincent Brooks Day & Son Imp

Tab. 6758.

BEGONIA Lyncheana.

Native of Mexico.

Nat. Ord. Begoniaceæ.

Genus Begonia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 841.)

Begonia (Begoniastrum) *Lyncheana;* monoica, glaberrima, rhizomate tuberoso, caule crasso erecto ramoso folioso, foliis breviter petiolatis late oblique oblongo-ovatis rotundatisve obscure lobatis denticulatis ciliolatis basi profunde cordato-2-lobis, stipulis magnis, pedunculis elongatis validis, corymbis terminalibus amplis multifloris, floribus coccineis, masculis precocioribus, perianthii segmentis 2 orbiculatis, staminibus undique patentibus, antheris brevibus oblongis obtusis filamentis liberis longioribus, fl. fœm. perianthii segmentis 2–4-parvis concavis ovario 3–4-ptero, alis latis obtusis dorsali elongato, stylis 3 profunde fissis stigmatibus subglobosis, placentis 2-fidis lobis undique ovaliferis.

B. Roezlii, *Lynch in* "*The Garden*," vol. xxiv. p. 162, t. 412 (*non Regel*).

A very noble species of a genus the ornamental species of which, numerous as they are, both Indian and American, are far from being exhausted for garden purposes. It belongs to the American set of the genus, but does not fit well into any of the sixty-one sections as defined by A. De Candolle in his elaborate monograph of the genus published in the fifteenth volume of the Prodromus. It comes near to *Gireoudia*, from which it differs in the multifid styles, in the free spreading filaments, and in the anthers not being in a compressed one-sided mass. Upon the whole, I believe its affinity is with the species of the section *Begoniastrum*, A. DC. (*Begonia* proper of Klotzsch), notwithstanding the few perianth lobes of the female flower, and the much divided styles; and in this case its near ally is *B. nitida*, Ait. (see Tab. 4046), with which it precisely accords in habit. The styles are in fact nearly those of section *Husyia*, A. DC., but are less deeply divided (see *B. octopetala*, t. 3559, *B. rubricaulis*, t. 4131, *B. Clarkei*, t. 5675, and *B. rosæflora*, t. 5680).

B. Lyncheana has been known under the name of *B. Roezli*, apparently given in ignorance of there being a

previously-published *Begonia* of that name (see Regel's Gartenflora, t. 871). It is a Mexican species, introduced by seed from Roezl, according to a note published in the "Gardener's Chronicle," vol. xi. part 1, p. 566 (1879), by M. Benary, of Erfurt, who raised it. Mr. Lynch, to whom I am indebted for the specimen here figured, received it from the Rev. Mr. Law, of Little Shelford, Cambridgeshire, and I gladly dedicate it to the indefatigable superintendent of the Cambridge Botanical Gardens, who has raised that establishment to a high degree of scientific value and of beauty. It flowers in early winter and for many succeeding months.

DESCR. Quite glabrous, monœcious. *Rootstock* stout, somewhat tuberous. *Stem* two to three feet high, erect, branched, as thick as the little finger, pale bright green, smooth. *Leaves* alternate, shortly petioled, five to eight inches long, very obliquely orbicular-oblong or subreniform, obscurely lobed, base deeply cordate with rounded lobes, margin erose and ciliolate, nerves ten to twelve, radiating from the petiole, bright green above, paler beneath with reddish nerves; petiole shorter than the blade, as thick as a goose-quill; stipules an inch long, sheathing, membranous, very deciduous. *Peduncles* axillary, stout, six to ten inches long, as thick as a swan's quill. *Panicle* corymbiform, six to eight inches in diameter, many-flowered, top flat, when young enclosed in an involucriform cup formed of two connate membranous bracts; flowers bright scarlet; pedicels half an inch long, slender. MALE fl. most abundant, appearing first. *Perianth segments* two, three-quarters of an inch in diameter, rounded, concave. *Stamens* many, in a hemispheric cluster; filaments free, shorter than the shortly oblong obtuse anthers. FEMALE fl. *Perianth segments* two to four, much smaller than in the male, concave. *Ovary* three- to four-winged; wings broad, rounded, dorsal produced very obtuse; placentas two-partite, segments ovuliferous on both faces, styles three, deeply divided, with capitate stigmas.—*J. D. H.*

Fig. 1, Stamen; 2, branch of female flower; 3, stigmas; 4 and 5, transverse sections of 4- and 5-celled ovaries:—*all but fig. 2 enlarged.*

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M.S. del, J.N. Fitch lith.

Vincent Brooks Day & Son Imp.

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Tab. 6759.

TRICHOCAULON PILIFERUM.

Native of South Africa.

Nat. Ord. Asclepiadeæ.—Tribe Stapelieæ.

Genus Trichocaulon (*N. E. Brown in Journ. Linn. Soc.*, vol. xvii. p. 164.)

Trichocaulon *piliferum;* caule brevissimo, ramis cylindraceis crassissimis erectis obtusis multi-sulcatis inter sulcos mamillatis, mamillis lævious seta rigida terminatis, floribus sparsis sessilibus, sepalis ovatis acuminatis, corolla late infundibulari-campanulata intus purpurea breviter 5-loba lobis late triangularibus acuminatis intus papillosis, coronæ lobis 2-fidis.

T. piliferum, *N. E. Brown, l. c.* t. xi. f. 1.

Stapelia pilifera, *Linn. Suppl.* p. 171; *Thunb. Fl. Cap.* vol. ii. p. 165; *Masson Stapel. Nov.* p. 17, t. 23.

S. (Gonostemon) pilifera, *DC. Prodr.* vol. viii. p. 655.

Piaranthus piliferus, *Sweet, Hort. Brit.* p. 359.

The singular plant here figured was published upwards of a century ago by Linnæus from specimens (or more probably a description) communicated by Thunberg from the Cape of Good Hope, and a very fair figure of it was published by Francis Masson in 1796, in his "Stapeliæ Novæ." Nothing further was known of it till 1882, when living specimens were received at the Royal Gardens from the Capetown Botanical Gardens, which flowered in 1883, and from which the present drawing was made. Previous to this, however, living specimens of another species of the genus were sent to Kew by Sir Henry Barkly, when Governor of the Colony, upon which Mr. N. E. Brown, in 1880, founded the genus *Trichocaulon*, to which also he referred the *Stapelia pilifera* of Linnæus.

The genus *Trichocaulon* is placed by Mr. Brown next to *Hoodia* (see Tabs. 6228 and 6348), of which it has the habit, but differs in the small five-lobed corolla, and deeply bilobed processes of the outer corona, which are horizontal and subfalcate. Both species are natives of the Karroo

district. The other species, *T. flavum*, N. E. Br., has a yellow corolla five-cleft to the base.

T. piliferum flowered at Kew in April, 1883, from specimens sent by Prof. MacOwan, F.L.S., Director of the Botanical Garden at Capetown.

Masson says of it, that it is found under shrubs on the driest hills of the Karroo near Roggevedt, and that it is eaten by the Hottentots, who call the plant Guaap.

Descr. *Stem* short, stout, as thick as the thumb, buried in the soil. *Branches* tufted, straight, cylindric, simple, erect, four to six inches high and one and a half to two inches in diameter, rounded at the top, dull grey green, with thirty to forty deep furrows; ridges between the furrows presenting a series of mamillary smooth tubercles tipped with a stout bristle one-sixth of an inch long that has a white base. *Flowers* one-half to two-thirds of an inch in diameter, sessile in the furrows. *Sepals* one-third the length of the corolla-tube, ovate, acuminate. *Corolla* between funnel- and bell-shaped, pale yellow red without, dark purple within, five-lobed above the middle; lobes broadly triangular, acuminate, papillose within, spreading, tips produced. *Column* small, dark purple; lobes of outer corona horizontal, deeply two-lobed; lobes falcate, the tips of those adjacent pairs almost touching. *Pollen-masses* semicircular, gland minutely winged.—*J. D. H.*

Fig. 1, Flower; 2, lateral view of staminal column; 3, the same viewed from above; 4, pollen-masses:—*all enlarged.*

W.H. del. et N. Fitch lith.

Vincent Brooks, Day & Son Imp.

L. Reeve & Co. London

TAB. 6760.

MECONOPSIS WALLICHII, *var.* fusco-purpurea.

Native of the Eastern Himalaya.

Nat. Ord. PAPAVERACEÆ.—Tribe EUPAPAVEREÆ.

Genus MECONOPSIS, *Vig.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 52.)

MECONOPSIS *Wallichii*, Hook.; *Bot. Mag.* t. 4668; *Icon. in Jard. Fleuristr.* vol. iii. t. 315, *et in Fl. de Serres*, vol. viii. t. 753 *iterata*; *Hook. f. et Thoms. Fl. Ind.* vol. i. p. 254; *Hook. f. Fl. Brit. Ind.* vol. i. p. 119; *Belgique Horticole*, vol. iv. t. 18.

VAR. *fusco-purpurea*; petalis fusco-purpureis.

The Himalayan alpine and subalpine species of *Meconopsis* threaten to prove troublesome to the botanist, being sportive both in habit and in the colour of the flowers; added to which the type specimens of the discoverer of three of them, the late Dr. Wallich, are much mixed in his Herbarium, now preserved in the apartments of the Linnean Society. These three are, *M. nepalensis*, DC. (t. 5585), *M. Wallichii*, Hook. (t. 4668), and *M. robusta*, Hook. f. and Thoms.; and there is the *M. aculeata*, Roxb. (Bot. Mag. t. 5456), which differs little except in size from *M. Wallichii*. All these have a branched panicle of large flowers, the development of which, in number and size of the flowers, depends a good deal upon the altitude and exposure of the locality in which they grow, insomuch that it would not be surprising if the species of another group of the genus, which are single-flowered and inhabit very lofty regions (*M. simplicifolia*, and *M. horridula*, Hook. f. and T.), proved to be reduced forms of the larger species of lower elevations.

M. Wallichii was first made known by Wallich through the collectors which he employed in the mountains of Nepal; and I collected it in the adjacent province of Sikkim in 1848, at elevations of 9000 to 10,000 feet, whence I sent seeds home, which produced in 1852 the plant figured in

this work (Tab. 4668); but whereas the flowers of the plant which I saw in Sikkim were of a dull purple colour, those of the cultivated ones were of a very pale blue, with sometimes a slight tinge of green. It is difficult, if possible, to match colours from memory, but I should say the colour of the petals in the flowering specimens which I gathered were nearer those of *M. aculeata* (Tab. 5456) than of either that of Tab. 4668 or of that now figured.

With the exception of this difference of colour, I can find no character whereby to distinguish this variety from the blue-flowered one. From its Western representative, *M. aculeata*, it differs in the larger size, more divided broader leaves, more open panicle of larger flowers, and softer hairs. It is remarkable that in Royle's representation of *M. aculeata* (Ill. Pl. Himal. t. 15), its petals are represented as red. From the golden-flowered *M. nepalensis* (t. 5585), which is far the tallest and handsomest of the genus, *M. Wallichii* differs in size, the smaller flowers, and much shorter capsules.

M. Wallichii, var. *fusco-purpurea*, was raised from Sikkim seeds by George Wilson, Esq., F.R.S., who flowered it in his choice collection at Wisley Wood in July last, and kindly sent it to me for figuring.—*J. D. H.*

Fig. 1, Stamens; 2, pistil; 3, section of ovary; 4, hair :—*all enlarged.*

Tab. 6761.

TULIPA Alberti.

Native of Turkestan.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Tulipa, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 818.)

Tulipa *Alberti;* bulbo ovoideo magnitudine mediocri tunicis exterioribus intus strigosis, caule erecto unifloro trifoliato puberulo, foliis glabris glauco-viridibus immaculatis, inferiore oblongo-lanceolato, superioribus minoribus lanceolatis, pedunculo erecto puberulo, perianthii magni campanulati splendide rubri segmentis late imbricatis exterioribus oblongis, interioribus obovatis omnibus basi luteis maculâ magna bifida rubro-brunnea præditis, staminibus perianthio 2–3-plo brevioribus filamentis glabris luteis antheras lanceolatas purpureas superantibus, ovario trigono-cylindrico, stigmatibus sessilibus magnitudine mediocribus.

T. Alberti, *Regel in Gartenflora*, vol. xxvi. (1877), p. 257, t. 912; *Baker in Gard. Chron.* n. s. vol. xx. p. 153.

This is another of the fine new Tulips which have been discovered lately through the Russian explorations in Central Asia. It was discovered by Dr. Albert Regel, after whom it was named by his father, in an expedition to the mountains of the province of Kuldscha, of which a detailed account will be found in the twenty-sixth volume of the Gartenflora, page 230 to 236. It is a neighbour of the well-known *T. Gesneriana*, from which it differs by its pubescent peduncle, flower-segments all six marked with a great bifid red-brown blotch upon a yellow groundwork at their base, and by the three outer being quite different in shape from the three inner. Two nearly-allied Siberian species have previously been introduced into English gardens and figured lately in the Botanical Magazine, *T. Greigi* on Tab. 6177, and the Georgian *T. Eichleri* on Tab. 6191. Our plate was drawn from a specimen that flowered with Mr. Elwes at Cirencester last April.

Descr. *Bulb* middle-sized, the outer tunics furnished with a few adpressed hairs inside. *Stem* about a foot long including the peduncle, terete, finely pubescent, one-

flowered. *Leaves* three, glaucous, glabrous, furnished with an inconspicuous glabrous pale horny edge, the lowest oblong-lanceolate, falcate, half a foot long, the two others smaller, lanceolate. *Peduncle* erect, four or five inches long. *Perianth* campanulate, bright red, two or two and a half inches long, the segments much imbricated, the three outer oblong, subacute, the three inner obovate-cuneate, all six furnished with a large faint bifid red-brown blotch on a yellow groundwork at the base. *Stamens* an inch long; the flattened yellow filaments glabrous at the base, longer than the purple lanceolate anthers. *Ovary* green, cylindrical-trigonous, shorter than the stamens; stigmas sessile, about equalling the diameter of the ovary.—*J. G. Baker.*

Fig. 1, Front view of stamen; 2, back view of stamen; 3, pistil:—*all enlarged.*

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M S del. J.N. Fitch lith.

Day & Son. Imp.

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Tab. 6762.

STEUDNERA COLOCASIÆFOLIA.

Native of Burma (?).

Nat. Ord. Aroideæ.—Tribe Dieffenbachieæ.

Genus Steudnera, *C. Koch*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 988.)

Steudnera *colocasiæfolia*; caule brevi crasso, foliis longe gracile petiolatis ovato-oblongis acuminatis basi retusis, vagina elongata, pedunculo petiolis multo breviore, spatha oblongo-lanceolata attenuato-acuminata retorta basi aperta obtusa v. rotundata intus atro-purpurea extus sordide flava, spadice sesquipollicari, staminodiis clavellatis, stigmatibus placentisque 5.

S. colocasiæfolia, *C. Koch in Wochenschrift.* 1869, p. 114; *Regel Gartenflora*, vol. xviii. p. 323, t. 633; *André Ill. Hortic.* t. xix. (1872), p. 33, t. 90; *Engler Monogr. Arac.* 452 (excl. var. β et Syn. *Gonatanthus Griffithii*).

At Tab. 6076 of this work an Aroid of unknown origin, but supposed to have been sent from Calcutta, is figured under the name of *Steudnera colocasiæfolia*, Koch, but which Mr. N. Brown has determined to be a different species, to which he has attached the name of *S. discolor* ("Gardener's Chronicle," vol. iv. (1875), p. 708). At that period there was much error in respect of the genus, which from its supposed affinities was concluded to be American, whilst the ovary had been erroneously described by both Koch (Wochenschrift. 1862, p. 114) and Engler (Monogr. Arac. p. 457) as two- to five-celled. At present about five species of the genus are known, viz. the present one, *S. discolor*, Hort. Bull., from India; *S. Griffithii*, Schott, from Burma, and two undescribed ones from Cachar.

The genus *Steudnera* has been referred to the tribe *Dieffenbachieæ* in the "Genera Plantarum," but it has much more claim to be placed in *Colocasieæ*, where it would be near its close allies the Indian *Ariopsis* (Tab. 4222), and the genera *Remusatia* and *Gonatanthus*.

The native locality of *S. colocasiæfolia* is unknown, but is probably Eastern Asiatic. The plant flowers annually in the Stove at Kew early in spring.

June 1st, 1884.

Descr. *Stem* very short, two to three inches high, as thick as a child's wrist, clothed with the membranous remains of old leaf-sheaths. *Leaves* crowded on the top of the stem; petiole rather slender, twelve to eighteen inches long, dull green, as in the long coriaceous vagina, which is auricled at the top; blade a foot long, ovate-oblong, acuminate, base retuse, dark green above with a narrow yellow margin, pale and glaucous beneath. *Peduncle* half as long as the petiole, rather slender, terete, dull green, streaked with dull red. *Spathe* oblong-lanceolate, long-acuminate, reflexed and sharply subrevolute, base rounded or obtuse, quite open, inner surface deep red-purple, outer dull yellow. *Spadix* one and a half inch long, rather slender but club-shaped, pale yellow, curved or inclined. Male fl. densely crowded and covering the clubbed apex, composed of linear anthers confluent into a columnar deeply grooved truncate mass, cells opening by terminal pores. Female fl. *Ovaries* crowded, subglobose, surrounded by two to four short clavate staminodes; stigma of five sessile rays; ovules many, on five parietal placentas, orthotropous, funicles slender.—*J. D. H.*

Fig. 1, Portion of spathe and spadix; 2 and 3, transverse section of anthers; 4, group of ovaries and staminodes; 5, transverse section of ovary; 6, ovules:—*all enlarged.*

M.S.del J.N.Fitch lith.

Vincent Brooks, Day & Son Imp.

Tab. 6763.

DRYMONIA MARMORATA.

Native of Guiana?.

Nat. Ord. Gesneraceæ.—Tribe Cyrtandreæ.

Genus Drymonia, *Mart.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1007.)

Drymonia *marmorata;* glaberrima, caule crasso obtuse 4-gono, foliis amplis longe petiolatis elliptico-ovatis utrinque subacutis crenulatis supra inter nervos impressos bullatis griseo-marmoratis subtus fusco-rubris costa nervisque crassis, petiolo crasso elongato, floribus magnis fasciculatis crasse pedicellatis, sepalis foliaceis amplis ovatis crenatis nervosis roseo-purpureis, corollæ flavæ tubo breviter exserto limbi lobis concavis fimbriatis, filamentis insigniter tortis, glandula hypogyna solitaria.

D. marmorata, *Hort. Bull; Retail List*, 1884, p. 43.

This superb plant belongs to a tropical American genus, the species of which are imperfectly known, and which may be expected to yield many species of botanical interest and horticultural value. About fourteen kinds are supposed to exist in European herbaria, but these, owing to their succulent habit, are almost uniformly so badly preserved that it is not possible to say whether the plant here figured is amongst those I have examined. The only species hitherto figured in a work on British garden plants is the *D. bicolor*, of the West Indies (the *D. villosa*, t. 4866, and *D. punctata*, t. 4089, are species of *Episcia*), which flowered at Knight's Nursery, in the King's Road, in 1836, and is represented in the "Botanical Register" (1838, t. 4), and which differs from this in foliage and flowers, and has little to recommend it for culture. The twisted filaments of *D. marmorata* are a very singular character; I am not aware that it has been observed in any other species of the genus.

The species of *Drymonia* are, in so far as they are known, all scandent, climbing on damp rocks and tree-trunks by means of long aerial roots thrown out from the internodes of the stem, which adhere to the support. This

habit renders them valuable for covering the walls of stoves. In the present instance the plant was probably not sufficiently advanced to assume this habit, as no rootlets appeared on the specimen sent for figuring.

I am indebted to Mr. Bull for the plant here figured, which flowered in his establishment in June, 1883. Unfortunately all record is lost of its origin; it, however, so far resembles some specimens of a Guiana species, that I think it may be a native of that country.

Descr. Quite glabrous. *Stem* very stout, as thick as the little finger, obtusely four-angled, pale brown mottled with darker streaks. *Leaves* very large, full-grown nearly a foot long, broadly elliptic-ovate, subacute at both ends, crenulate, thick and almost fleshy, above bullate between the nerves, green mottled with light grey, beneath of a light vinous purple with very prominent midrib and nerves; petiole very stout, two to four inches long, terete, channelled down the front. *Flowers* fascicled in the leaf-axils; peduncles one to four inches long, stout, ascending, rose-coloured spotted with grey. *Sepals* one to one and a quarter inch long, foliaceous, ovate, subacute, base cordate, strongly nerved, rose-purple. *Corolla* one and a half inch long, declinate, pale yellow slightly suffused with pink; tube half an inch in diameter; lobes rounded, concave, margins fimbriate. *Stamens* included, filaments hardly united below, but disposed in two pairs, flattened, very strongly twisted; anthers linear-sagittate, obtuse. *Disk-gland* solitary, dorsal, erect, concave. *Ovary* quite glabrous; style stout, stigma discoid, included.—*J. D. H.*

Fig. 1, Base of corolla-tube and stamen; 2 and 3, top of filaments and anthers; 4, ovary and disk:—*all enlarged.*

A.B. del. J.N. Fitch lith.

Vincent Brooks Day & Son Imp.

Tab. 6764.

HYPERICUM EMPETRIFOLIUM.

Native of Greece.

Nat. Ord. Hypericineæ.—Tribe Hypericeæ.

Genus Hypericum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 165.)

Hypericum (Coridia) *empetrifolium*; glaberrimum, a basi ramosissimum, ramis fruticosis erectis ramulosis tenuibus, foliis ternis anguste linearibus obtusis marginibus revolutis integerrimis pellucido-punctatis, cymis paucifloris paniculatis, sepalis oblongis obtusis marginibus glandulosis fructiferis patulis, petalis sepalis 2–3-plo longioribus ovato-rotundatis deciduis, carpellis dorso 2-vittatis lateribus vesiculosis, seminibus brevibus papillosis.

H. empetrifolium, *Willd. Sp. Pl.* vol. iii. p. 1452; *Boiss. Fl. Orient.* vol. i. p. 792; *Sibth. Fl. Græc.* t. 774; *DC. Prodr.* vol. i. p. 553; *Watson Dendrolog. Brit.* t. 141.

H. multicaule, *Lamk. Dict.* vol. iv. p. 178.

H. Coris, *Sibth. Fl. Græc.* t. 777, *non L.*; *Bot. Mag.* t. 178.

At Tab. 178 of this work a representation of *Hypericum empetrifolium* is given under the wrong name of *H. Coris*, and it is so insufficient a one that a repetition is unavoidable. These two species would, indeed, at first sight be supposed to be closely related, but, as stated under the description of the true *H. Coris* (Tab. 6563), the resemblance is confined to both being erect, with linear whorled leaves; whilst the points of difference are that *H. Coris* has herbaceous branchlets, narrow sepals which are erect in fruit, and narrow persistent petals. *H. empetrifolium*, on the other hand, has woody branchlets, small almost rounded sepals which are spreading in fruit, and much smaller broad deciduous petals. The geographical ranges of the two are also quite wide apart, *H. Coris* extending from the South of France to Italy and the Tyrol, whilst *H. empetrifolium* has its headquarters in Greece, extending westwards to the Island of Zante, eastwards to the hills around Smyrna, and the Hellespont, and southwards to the Islands of Crete, Rhodes, and Paros.

H. empetrifolium has been long cultivated at Kew; it

was introduced into England by Messrs. Lee, of Hammersmith, in 1788, from the Crimea, as was supposed, where, however, it does not grow. It was, no doubt, brought by a ship that traded with that port, but touched at others where seeds were procured. It flowers in July, and is tender. *H. Coris* flowers rather later.

Descr. A small erect much branched quite glabrous shrub, eight to twelve inches high; branches slender, erect, four-angled, leafy. *Leaves* three in a whorl, half to three-quarters of an inch long, sessile, narrowly linear, obtuse, gland-dotted, deep green, margins revolute, quite entire. *Cymes* panicled, few-flowered; peduncles an inch long, trichomously three-flowered; middle flower sessile, opening first; lateral pedicelled. *Flowers* half to two-thirds of an inch in diameter, pale golden yellow. *Sepals* small, broadly oblong, obtuse, spreading in fruit; margins with a few large black sessile glands; back with long oil canals. *Petals* broadly oblong, straight, concave, deciduous, eglandular. *Stamens* triadelphous, shorter than the petals. *Ovary* three-celled; carpels smooth, back with linear oil canals; styles subulate.—*J. D. H.*

Fig. 1, Top of cyme; 2, flower cut vertically; 3, sepal; 4, bundle of stamens; 5, stamens; 6, ovary; 7, top of style; 8, transverse section of ovary; 9, leaf:—*all enlarged.*

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Tab. 6765.

CARAGUATA SANGUINEA.

Native of New Granada.

Nat. Ord. Bromeliaceæ.—Tribe Tillandsieæ.

Genus Caraguata, *Lindl.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 668.)

Caraguata *sanguinea*; acaulis, foliis lanceolatis dense rosulatis falcatis chartaceis basi paulo dilatatis deorsum viridibus sursum sanguineo tinctis, exterioribus pedalibus, interioribus sensim brevioribus, floribus multis in foliorum centro nidulantibus breviter pedicellatis, bracteis oblongis obtusis membranaceis, calycis segmentis oblongis erectis brevibus obtusis basi coalitis, corollæ tubo elongato clavato stramineo segmentis brevibus ovatis obtusis patulis, staminibus ad tubi faucem insertis uniseriatis filamentis brevissimis antheris linearioblongis basi sagittatis, ovario ampullæformi stylo elongato apice stigmatoso breviter tricuspidato, fructu capsulari oblongo.

C. sanguinea, *André in Rev. Hort.* 1883, p. 468, cum icone.

Tillandsia sanguinea, *André Tour du Monde*, p. 367.

During his explorations of the Northern Andes in 1876, M. Edouard André paid special attention to the Bromeliaceæ and Bomareas. The present plant is one of the most remarkable of the novelties which rewarded his labours. It has entirely the habit of a *Nidularium*, but the ovary is free from the calyx, and the structure of the flower in other respects quite corresponds with that of the genus *Caraguata*. The bright tint of the leaves, which varies a good deal in different individuals, renders it a very desirable acquisition to our conservatories. It is, of course, an epiphyte in its native forests. It was first seen by M. André in May, 1876, at a place called "Los Astrojos," situated between Tuquerres and Barbacoas, in the western cordilleras of the Andes of New Granada. None of the first gathering reached Europe alive, but on a second visit, in 1880, he succeeded in bringing it home. A stock of the plant has been raised by M. Bruant, of Poitiers. Our drawing was made in November, 1883, from a plant which was presented by M. André to the Kew collection.

Descr. Acaulescent. *Leaves* arranged in a dense rosette,

lanceolate, acute, falcate, thin in texture, minutely obscurely lepidote on both surfaces, the ribs fine and numerous, the margin entire, the clasping base but little dilated, the lower part green, the upper half or two-thirds strongly tinged with bright red on both sides, the outer leaves of the rosette a foot or more long, the inner growing gradually shorter. *Flowers* arranged in a cluster at the base of the centre of the rosette of leaves, each furnished with a short pedicel, which is subtended by an oblong obtuse membranous bract. *Calyx* under an inch long, with three oblong obtuse erect segments united in a cup at the base. *Corolla* two and a half or three inches long, with a long clavate yellowish-white tube and three short spreading ovate obtuse segments. *Stamens* all six inserted at the same level near the throat of the corolla-tube; filaments adnate nearly to the apex; anthers linear-oblong, sagittate at the base. *Ovary* ampullæform, with very numerous superposed ovules in each of the three cells; style filiform, reaching out of the corolla-tube; stigmas short, ovate, not spirally twisted. *Capsule* oblong, chartaceous; seeds numerous, like those of a *Tillandsia*.—*J. G. Baker.*

Fig. 1, The whole plant, *much reduced*; 2, a flower, *life size*; 3, portion of the corolla, with stamens, *enlarged*; 4, pistil, *life size*; 5, apex of style; 6, ovary:—*both enlarged.*

A.B. del, J.N.Fitch lith.

Vincent Brooks, Day & Son Imp.

L Reeve & Cº London

Tab. 6766.

SOLANUM Jamesii.

Native of Arizona and Mexico.

Nat. Ord. Solanaceæ.—Tribe Solaneæ.

Genus Solanum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 6756.)

Solanum *Jamesii*; humile, glabrum v. sparse pubescens, inerme, caule ramoso gracili angulato, foliis petiolatis, foliolis 5–9 ovatis oblongis lanceolatis ovato-oblongisve subacutis inferioribus minoribus (minoribus 0 interjectis) stipulæformibus 0, cymis pedunculatis paucifloris, corolla profunde 5-loba alba, antheris consimilibus obtusis, bacca globosa calyce non inclusa.

S. Jamesii, *Torrey in Ann. Lyc. New York*, vol. ii. p. 227, and in *Bot. Mex. Bound.* p. 157; *A. Gray in Amer. Journ. Sc.* ser. 2, vol. xxii. p. 285, and in *Synopt. Fl. N. Am.* vol. ii. p. 227; *Baker in Journ. Linn. Soc. Bot.* vol. xx. p. 503, t. 45.

The subject of the present Plate has, along with another tuber-bearing Potato of the south-western mountains of North America (*S. Fendleri*), excited a good deal of interest as affording a new esculent vegetable, and possibly the means of improving or rendering disease-proof our cultivated species. Experiments are now being made with these and other wild sorts on both sides of the Atlantic, the results of which are looked forward to with much interest. Of these two American species, the present is very distinct from all its congeners, but the other, *S. Fendleri* of A. Gray, to which he subsequently gave the name of *S. tuberosum* var. *boreale*, is supposed by its author to be a northern form of the *S. tuberosum*, which in that case extends from Arizona and New Mexico to Chili. This latter is also in cultivation, and I shall hope to figure it soon. It differs in the angular (not deeply lobed) corolla, in the broader leaflets, and in there being small interposed ones between some of the larger. A good account of finding both these Potatoes is given by Mr. J. G. Lemmon, of Oakland, California, under the title of "Discovery of the Potato in Arizona," in a paper read before the Californian Academy of Sciences, January 15, 1883. In this Mr. Lemmon gives much interesting information regarding the mountain home of

S. Jamesii and *Fendleri*. Amongst other matters, he states that both species are fed upon by the Potato beetle (*Doryphora decem-lineata*), as I found other species to be in Colorado.

S. Fendleri extends from the mountains of Arizona to those of Mexico, at various elevations. The Royal Gardens are indebted both to the Department of Agriculture of Washington and to Mr. Lemmon for tubers which, arriving early in 1883, produced an excellent crop of plants in the same year, flowering in autumn, and yielding tubers which, on being cooked by Mr. Baker, were pronounced excellent in flavour and texture.

Descr. A small herb, a foot high or under, branched, glabrous or sparsely hairy. *Tubers* ellipsoid, half to three-quarters of an inch long. *Stem* and *branches* angular, rather slender. *Leaves* two to four inches long, petioled, pinnate; leaflets five to nine, terminal often one inch, ovate-lanceolate, lateral sessile, without interposed minute ones, oblong or oblong-lanceolate, subacute, dull green; stipular leaflets none. *Cymes* few-flowered, erect, peduncles and pedicels slender. *Flowers* suberect, three-quarters of an inch in diameter, white. *Calyx* hemispheric, teeth minute. *Corolla-tube* very short, lobes oblong or ovate-lanceolate, subacute. *Anthers* all subequal, half the length of the corolla-lobes, obtuse. *Ovary* glabrous. *Berry* small, globose, subtended by the very small calyx.—*J. D. H.*

Fig. 1, Flower cut vertically; 2, stamens; 3, top of style and stigma; 4, transverse section of ovary; 5, tubers:—*all but fig. 5 enlarged.*

M. S. del. J.N. Fitch lith.

Vincent Brooks Day & Son Imp

Tab. 6767.

BEGONIA Beddomei.

Native of Assam.

Nat. Ord. Begoniaceæ.

Genus Begonia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 841.)

Begonia *Beddomei;* acaulescens, monoica, laxe patentim pilosa, rhizomate tuberoso lobato multicipiti, foliis omnibus radicalibus amplis longe petiolatis membranaceis pellucidis oblique cordato-rotundatis v. -ovatis obscure remote angulatim lobulatis denticulatisque nervis pilosis primariis radiantibus supra glabris subtus puberulis glabratisve, petiolo erecto, scapo petiolis breviore stricto basi vaginato, vaginis ovatis acuminatis erectis brunneis, cyma depressa pauciflora, ramis brevibus divaricatis, bracteis parvis lanceolatis, floribus pallide roseis, ♂ perianthii segmentis 4 antico et postico late ovato lateralibus oblongis, staminibus in globum aggregatis, filamentis brevibus liberis, connectivo crasso; fl. ♀ perianthii segmentis ad 8, ovario 3-gono ala dorsali obtusa, stigmatibus 3 bicruribus tortis.

This is another addition to the already large group of Asiatic Begonias marshalled under the section *Platycentrum* of Alphonse de Candolle, which includes yellow, pink, and white-flowered species (see *B. xanthina*, t. 4683, 5202, 5207; *B. rubro-venia*, t. 4689; *B. Griffithii*, t. 4984; *B. Rex*, t. 5201, and others), but differs from the sectional character in having three styles instead of two, as indeed do other species (as *B. Cathcartii*). Most of these species have acuminate connectives to the anther, an organ which in our plant is very broad and hardly even acute. The pellucid character of the leaf is a very striking one, the red of the under surface being in certain lights visible through the tissue, and the white spots have a beautiful silvery lustre.

B. Beddomei is a native of the Assam hills, whence tubers were sent by Gustav Mann, Superintendent of Forests, to Col. Beddome, F.L.S., after whom I have the satisfaction of naming it, and to whom the Royal Gardens are indebted for the plant which is here figured, and which flowered in December last.

Descr. *Rootstock* the size of a walnut, tuberous, lobed, dark brown. *Leaves* all radical, erect; blade horizontal,

four to six inches in diameter, membranous and quite pellucid, broadly and very obliquely ovate-cordate or orbicular-cordate, obscurely angularly lobed and denticulate, ciliolate, above very pale green with white spots, glabrous or obscurely hairy, beneath pale dull red-purple, slightly hairy between the very hairy strong nerves ; petiole four to six inches long, pale green, laxly clothed with soft spreading hairs. *Scape* shorter than the petiole, clothed at the very base with ovate acuminate erect dark brown sheathing scales, pale green, nearly glabrous. *Cyme* of two short spreading branches, bearing each a very few pale rose-coloured flowers, of which one or more is a female; bracts small, lanceolate; pedicels half an inch long or more. MALE FLOWER one inch and a half in diameter. *Perianth-segments* four, spreading, anterior and posterior broadly ovate, obtuse ; two lateral narrower, oblong. *Stamens* in a dense globose head, filaments short free ; anthers small broad, with a tumid subacute connective and short lateral cells. FEMALE FLOWER smaller and darker coloured. *Perianth-segments* eight, broadly oblong. *Ovary* three-angled, two-celled, one angle shortly produced into an obtuse wing. *Styles* three, short, dilating into a truncate twisted lobed stigma; ovules on all sides of the projecting placentas in each cell.—*J. D. H.*

Fig. 1, Stamen; 2, styles; 3, transverse section of ovary :—*all enlarged.*

M del, J.N.Fitch lith.

Vincent Brooks Day & Son lith

Tab. 6768.

BESCHORNERIA Decosteriana.

Native of Mexico.

Nat. Ord. Amaryllideæ.—Tribe Agaveæ.

Genus Beschorneria, *Kunth.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 733.)

Beschorneria *Decosteriana;* acaulis, foliis basalibus dense rosulatis oblanceolatis 2–2½-pedalibus crassis carnosulis obscure carinatis ad apicem acutum sensim attenuatis facie obscure viridibus dorso glaucescentibus margine scabris denticulatis, pedunculo valido erecto foliis multis reductis bracteiformibus prædito, paniculæ ramis multis patulis vel cernuis, pedicellis 2–3-nis gracilibus apice articulatis, bracteis magnis ovatis scariosis albidis rubro tinctis, ovario clavato apice libero, limbi segmentis oblanceolatis viridibus valde imbricatis, genitalibus limbo subæquilongis, fructu subgloboso coriaceo.

B. Decosteriana, *Hort. Leichtlin.*

Four species of *Beschorneria* have already been described and figured in the Botanical Magazine, viz. *B. tubiflora*, tab. 4642; *B. yuccoides*, tab. 5203; *B. Tonelii*, tab. 6091; and *B. bracteata*, tab. 6441. From all of these the present plant differs by its more robust habit, thicker and more fleshy leaves, and more ample panicle, with the flowers always two or three in a cluster. For horticultural purposes it is decidedly the finest representative of its genus. I am not aware from whom the name employed originated, but we received the plant under it some time ago from Herr Leichtlin, of Baden Baden. Our drawing was made from a specimen that flowered in the Cactus-house at Kew in the early months of 1884. Four other supposed species were also named by Jacobi (*pumila*, *Galeottei*, *Schlechtendalii*, and *Verlindeniana*), but we have never had authenticated specimens of them, and they have not been described.

Descr. *Leaves* twenty or more, arranged in a dense sessile basal rosette, oblanceolate, two or two and a half feet long, two and a half inches broad at the middle, narrowed gradually to the acute tip and to half that breadth above the dilated base, where it is half an inch thick, the thickest in

texture of any known species of the genus, dull green on the upper surface, glaucescent beneath, obscurely carinate, minutely denticulate on the margin. *Peduncle* twice as long as the leaves, stout, erect, furnished with numerous reduced bract-like leaves. *Panicle* deltoid, about as long as the peduncle, with numerous spreading or cernuous branches, the lower a foot or more long; flowers in a few distant clusters of two or three each; pedicels reaching an inch or more in length, slender, articulated at the tip; bracts numerous, large, ovate, scariose, persistent, white tinged with bright red. *Ovary* clavate, protruded beyond the perianth-tube at the apex, furnished with six distinct grooves. *Perianth-limb* green, an inch and a half long, cut down nearly to the base into six much imbricated oblanceolate segments. *Stamens* and *style* reaching nearly to the tip of the perianth-segments. *Capsule* coriaceous, subglobose.—*J. G. Baker.*

Fig. 1, A flower, *life size*, with the perianth-limb cut away; 2, front view of a stamen; 3, back view of a stamen; 4, upper part of ovary, with style; 5, stigma:—***all more or less enlarged.***

M. Snel del. et lith.

Vincent Brooks Day & Son Imp.

L. Revee & Co. London.

Tab. 6769.

RHODODENDRON MULTICOLOR.

Native of Sumatra.

Nat. Ord. Ericeæ.—Tribe Rhodoreæ.

Genus Rhododendron, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 599.)

Rhododendron *multicolor;* fruticulus glaberrimus parce lepidotus, foliis verticillatis breviter petiolatis anguste elliptico-lanceolatis utrinque attenuatis, floribus terminalibus paucis subumbellatis, bracteis caducis oblongis pedicellos æquantibus, calyce obscuro cupulari, corollæ infundibulari-campanulatæ 5-lobæ lobis rotundatis v. late ovatis, staminibus 10, antheris vix exsertis, ovario glanduloso 5-loculari, capsula lignosa recta 5-loculari.

R. multicolor, *Miquel Fl. Ind. Bat. Suppl.* vol. i. p. 586.

The mountains of Sumatra, like all others of tropical East Asia, appear to abound in Rhododendrons. Miquel, in the supplement to the "Flora of the Dutch East Indies," which volume deals solely with Sumatran plants, enumerates six species, of which three are also natives of Java, namely, *R. javanicum*, Benn. (tab. nost. 4336), *R. citrinum*, Hassk. (tab. 4797), and *R. retusum*, Benn. (tab. 4859). There is also figured in this work *R. malayanum*, Jack. (tab. 6045), originally found in Sumatra, but is now known to be identical with *R. tubiflorum*, DC., of Java, and *R. celebicum*, DC., of the Celebes, and to which *R. lampongum*, Miquel, of Sumatra, also belongs.

From all the above *R. multiflorum* is very distinct in the foliage, and though it approaches *R. citrinum* in the shape of the corolla, it differs from it in the absence of calyx-lobes, and in the stamens being twice as numerous. As far as can be judged, without having seen ripe capsules and seeds, it is referable to the same group of the genus as the Indian *R. formosum* (tab. 4457) and *R. cinnabarinum* (tab. 4788). Most of the Malayan species, however, belong to another section of the genus (*Vireya*), in which the valves of the capsule twist after dehiscence, the placentæ separate from the axis, and the seeds are very long-tailed at both ends.

August 1st, 1884.

As far as can be judged from immature capsules, *R. multicolor* does not belong to this section. A variation in colour, such as this species presents, is not unusual in the genus, and occurs in *R. javanicum*, *R. lepidotum*, and others, but in none known to me is the contrast so vivid between the yellow and red as in *R. multicolor*.

This beautiful plant was introduced by Messrs. Veitch, seeds having been sent home by their indefatigable collector, Mr. Curtis, who has since been appointed by the Secretary of State for the Colonies to the charge of a new colonial Botanical Garden, which is about to be formed in the Island of Penang. The red variety flowered in Messrs. Veitch's establishment in December of last year, and the yellow flowered in February of this. It is to this indefatigable firm that we owe almost all the Malayan Rhododendrons that have been introduced into England.

Descr. A small glabrous slender bush, with a few minute scattered scales on the shoots, back of the leaf, petiole, and pedicels. *Leaves* whorled, from three to seven together, two to three inches long, by one-half to three-fourths of an inch broad, elliptic-lanceolate, narrowed at both ends, contracted into short petioles, rather dull green above, paler beneath; midrib stout; nerves indistinct. *Flowers* few, horizontal, in terminal umbels, arising from deciduous oblong concave pale-green bud-scales, which are as long as the pedicels (one-half to three-fourths of an inch). *Calyx* minute, obscurely five-lobed. *Corolla* one inch long, between funnel- and bell-shaped, dark red or bright yellow; lobes five, equal, one-third the length of the tube, ovate obtuse in the red form, more rounded in the yellow. *Stamens* ten, included, subsymmetrically disposed, filaments subequal, hairy at the base; anthers small, yellow. *Ovary* five-celled, oblong, obscurely pubescent; style oblique, stigma truncate. *Capsule* (unripe) one-third of an inch long, woody.—*J. D. H.*

Figs. 1 and 2, Stamens; 3, calyx and ovary; 4, transverse section of ovary:— *all enlarged.*

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M.S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Imp.

I. Herve & Co. London

TAB. 6770.

BERBERIS CONGESTIFOLIA, *var.* hakeoides.

Native of Chili.

Nat. Ord. BERBERIDEÆ.—Tribe BERBEREÆ.

Genus BERBERIS, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 41.)

BERBERIS *congestiflora*; ramis robustis decurvis foliosis, foliis orbicularibus v. late oblongis sessilibus v. breviter petiolatis crasse coriaceis spinuloso-dentatis subtus glaucis, stipularibus flabellatis sinuato-spinulosis, floribus in capitula sessilia axillaria et in spicas terminales interruptas conglobatis, sepalis 9, 3 extimis oblongis obtusis, 3 intimis late oblongis concavis, petalis 6 anguste obovato-oblongis incurvis, filamentis brevibus apice 2-cornutis, ovario oblongo, stigmate sessili.

B. congestiflora, *Gay. Fl. Chili*, vol. i. p. 75, t. 3.

VAR. *hakeoides*, foliis majoribus imbricatis, ramis in spicas interruptas elongatas densissime floriferas abeuntibus.

This is a very striking plant, and quite unlike any Barberry hitherto cultivated. It forms a large bush, with decurved branches loaded with globose masses of flowers, some of which are sessile in the axils of the leaves, and many more form consecutive heads sessile on the long leafless terminations of the branches, which gives the shrub a very singular appearance. In the curious fan-shaped stipuliform leaves it approaches the Chilian *B. actinacantha*, Mart. (Bot. Reg. vol. xxxi. t. 55), but differs in the form of the leaves, which are glaucous beneath, and in the inflorescence. Its real affinity is with *B. congestiflora*, Gay, of Chili, of which the usual form has the heads of flowers on axillary peduncles; this is a marked difference, but specimens collected by Lechler are hardly distinguishable from our plant, and considering the excessively variable habits of all the genus, and that the plant from which our drawing is made has been cut back several times, much importance cannot be attached to characters founded on habit; both have rounded leaves, glaucous beneath, and similar stipular ones, both have the spurred tips to the filaments, and they

come from the same country. Under these circumstances, whilst the name *hakeoides* may be usefully maintained, this plant must be looked upon as likely to develop the characters of the true *B. congestiflora*.

For this fine addition to English shrubberies I am indebted to Messrs. Veitch, who introduced it in 1861 through their collector, the late Richard Pearce, from the Cordillera of Chili (near Arguilhue), and who have flowered it annually in the open air in their fine garden at Coombe Wood in early spring.

Descr. A stout ramous bush, six to seven feet high; branches angular, glabrous, the terminal elongate and decurved, loaded with leaves and flowers. *Leaves* one to two inches long, almost imbricating, sessile or shortly petioled, orbicular or very broadly oblong, convex, very thickly coriaceous, rigidly spinous-toothed, base rounded or cordate, bright green above, glaucous beneath, upper gradually smaller; petiole one-sixth to one-fourth of an inch long; stipular leaves semicircular, deeply spinous-sinuate, nerves flabellate. *Flowers* in dense globose simple or compound heads one-half to three-quarters of an inch in diameter, which are sessile or shortly peduncled in the axils of the leaves, or sessile along the flagelliform leafless ends of the branches, thus forming long interrupted spikes; pedicels short, glabrous. *Perianth* a fourth of an inch in diameter, subglobose, bright golden-yellow. *Sepals* nine, three outer smallest, linear-oblong, obtuse, three intermediate larger, nine broadly oblong concave obtuse. *Petals* six, in a regular series, erect, incurved and conniving, narrowly oblong, obtuse or emarginate; glands oblong. *Stamens* very short, filaments with a horizontal spur on each side at the top projecting laterally beyond the shortly oblong anther. *Ovary* ellipsoid, smooth; stigma pulviniform, sessile. *Berry* small.—*J. D. H.*

Figs. 1 and 2, Stipuliform leaves; 3, flower; 4, petal; 5 and 6, stamens; 7, stamen with the anther-valves open; 8, ovary :– *all enlarged.*

M. S del. J.N. Fitch lith.

Vincent Brooks, Day & Son Imp.

J. Reeve & Co. Lovell.

Tab. 6771.

ODONTOGLOSSUM Edwardi.

Native of Ecuador.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Odontoglossum, *H. B. et K.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 56.)

Odontoglossum *Edwardi;* pseudobulbis ellipsoideis compressis, foliis geminis elongatis loriformibus subacutis, floribus secus ramos patentes paniculæ erectæ pyramidatæ longe pedunculatæ racemosis, bracteis parvis, perianthio purpureo callis labelli aureis, foliolis patenti-recurvis crispatis subæqualibus, sepalis subunguiculatis dorsali late oblongo obtuso, lateralibus angustioribus, petalis obovato-oblongis labello petalis paullo longiore linguæformi basi utrinque lobato ultra medium recurvo apice obtuso, disco callis magnis deformibus carunculato, columna brevi infra apicem antice utrinque breviter alata, alis crenatis.
O. Edwardi, *Rchb. f. in Gard. Chron.* vol. x. 1878, p. 74.

According to Dr. Reichenbach, this belongs to Lindley's section *Myanthium* of *Odontoglossum*, characterized by the sessile lip, clawed sepals, and comparatively small flowers, which are further described as having parallel lateral sepals, which project considerably below and beyond the lip, giving the flower a peculiarly irregular appearance. This latter character I do not find to be possessed by *O. Edwardi*, which rather falls into the section *Isanthium*, with radiating subequal sepals, producing singularly regular flowers. *O. Edwardi* is a native of Ecuador, where it was discovered by Edward Klaboch, whom Dr. Reichenbach describes as an energetic collector. The specimen here figured flowered in the Royal Gardens in April of the present year.

Descr. *Pseudobulb* three to four inches long, narrowly ellipsoid, compressed, smooth. *Leaves* in pairs from the top of the pseudobulb, two feet long, strap-shaped, one and a half inch wide, subacute, smooth above, striate beneath, dark green. *Panicle* two feet long, suberect on a slender peduncle; rachis slender, slightly curved; branches alternate, horizontal or decurved, many-flowered. *Flowers* rather distant, an inch in diameter; pedicel and ovary three-

quarters of an inch long; bracts minute, ovate, appressed to the pedicel. *Perianth* dark purple, except the golden-yellow calli on the lip; leaflets of about equal length, all spreading and recurved, crisped. *Dorsal sepal* clawed, broadly oblong, obtuse; lateral spreading horizontally, narrower, subsessile. *Petals* like the dorsal sepal. *Lip* tongue-shaped, broader and obscurely lobed on the sides at the base; distal half deflexed, obtuse; disk with prominent lobulate calli. *Column* purple, with two small short toothed wings towards the top on each side.—*J. D. H.*

Fig. 1, Column and lip; 2, anther; 3 and 4, pollen :—*all enlarged.*

6772.

Tab. 6772.

SALVIA DISCOLOR.

Native of Peru.

Nat. Ord. Labiatæ.—Tribe Monardeæ.

Genus Salvia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1194.)

Salvia (Calosphace) *discolor;* caule fruticoso erecto cano-tomentoso, ramulis glutinosis, foliis petiolatis ovato-oblongis oblongo-lanceolatisve obtusis v. acutiusculis basi rotundatis integerrimis supra glabris viridibus subtus niveo-tomentosis, verticillis 4–8-floris distantibus, bracteis floribusque caducis, calyce campanulato vix ad medium 2-labiato, labiis suberectis integris v. inferiore 2-fido, corollæ purpureæ tubo calyce incluso recto, labio superiore anguste oblongo recto subacuto, inferiore latiore subquadrato apice 2-lobo, connectivo recto lineari acuto.

S. discolor, *Kunth in Humb. et Bonpl. Nov. Gen. et Sp.* vol. ii. p. 294, t. 146; *Benth. in DC. Prodr.* vol. xii. p. 338.

S. mexicana, *var.* minor, *Hemsl. in Gard. Chron.* vol. xix. (1883), p. 341, fig. 49 (position of calyx inverted), and vol. xx. (1883), p. 588.

S. nigricans, *Hort. Cannell.*

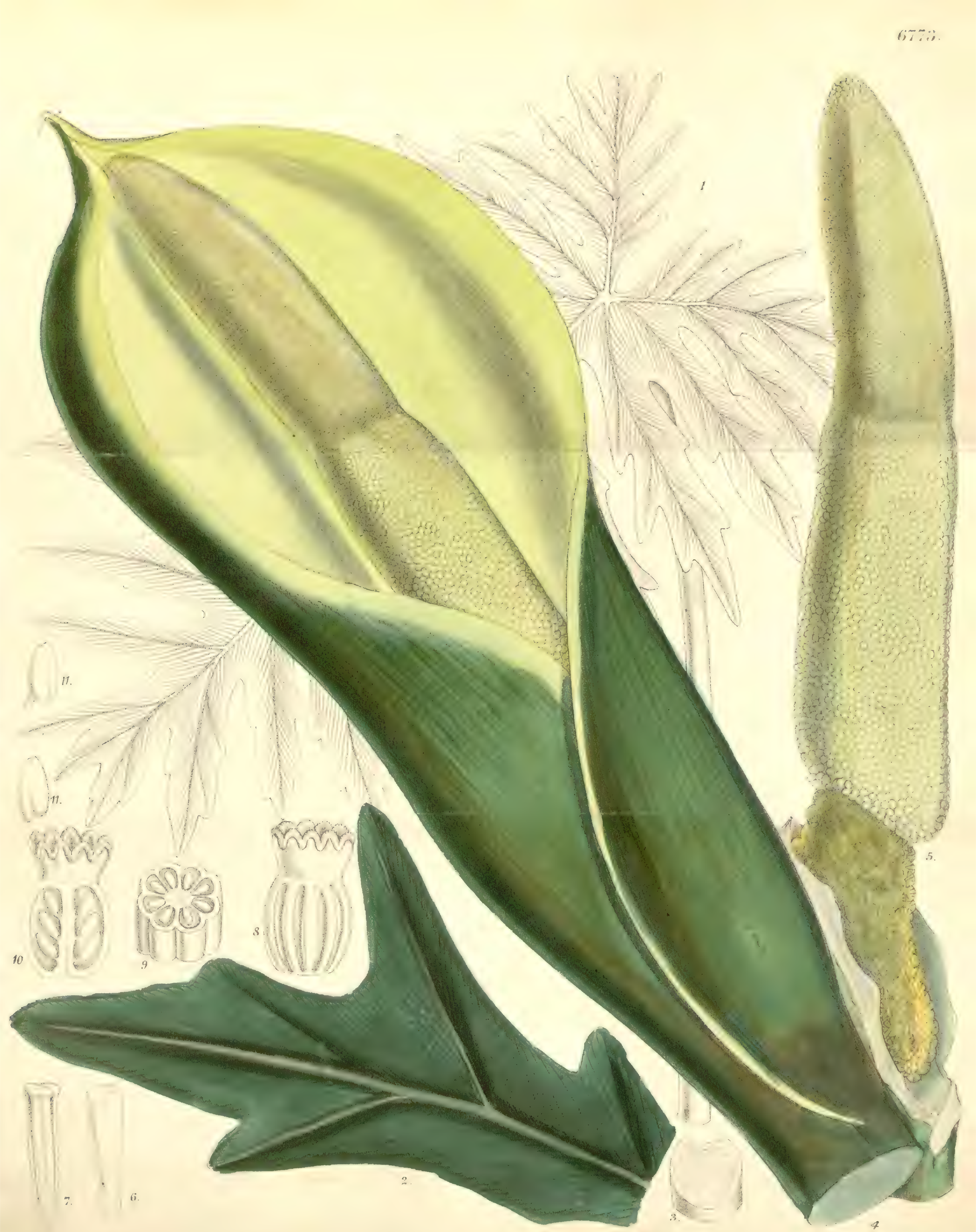
This remarkable plant has excited a good deal of interest, due to its strikingly bold and handsome port, and the deep almost black hue of the flowers. It was first exhibited by Mr. Cannell under the garden name of *S. nigricans*, and was subsequently supposed to be identical with *S. mexicana*, var. *minor*, Benth. (in DC. Prodr. vol. xii. p. 337), to which it is closely allied, but differs in the form of both calyx and corolla, and it comes from a very different country. It belongs indeed to a section (*tubiflorœ*, Benth.), of which most of the species are Peruvian or New Grenadan. One of its most singular characters is the caducous nature of the bracts and flowers, so that it was not till after some disappointments that I procured specimens fit for figuring, which I owe to the kind trouble taken by Mr. Lynch, of the Cambridge Botanical Gardens, in carefully packing and forwarding specimens. Its brittle character, no doubt, accounts for the error in the otherwise excellent figure in the "Gardener's Chronicle," which represents the bifid under lip as the superior one.

August 1st, 1884.

S. discolor is a native of moist valleys in the Peruvian Andes, where it was discovered by Humboldt and Bonpland in the valley of the river Guancabamba, at an elevation of 6000 feet. It is not known where Mr. Cannell's specimens were procured; that figured here flowered in a greenhouse of the Cambridge Botanical Gardens in February, 1883.

Descr. *Stem* three to four feet high, terete, clothed with dense white tomentum, as are the petioles, leaves beneath, and inflorescence. *Leaves* three to five inches long, narrow ovate-oblong, obtuse or subacute, base rounded, above dull green, nearly glabrous, nerves beneath closely reticulate; petiole one to two inches long. *Racemes* terminal, very long-peduncled, one to two feet long, inclined, many-flowered; flowers in distant whorls of four to eight, very shortly pedicelled. *Calyx* three-fourths of an inch long, tubular-campanulate, hoary-tomentose, striate, two-lipped to the middle or one-third way down; lips erect, triangular-ovate, subacute, upper entire, lower entire or acutely two-fid. *Corolla* deep violet-blue, paler on the tube and throat; tube slightly decurved, rather longer than the calyx, gibbous on the throat below the upper lip; upper lip narrow-oblong, obtuse, one-third of an inch long; lower longer, subquadrate, two-lobed, spreading. *Stamens* included, lower arm of the connective straight, as long as and in the same line with the upper, glandular, cylindric, subacute, upper glabrous columnar; anthers linear-oblong. *Disk* very large, produced behind and there overlapping the small nutlets.—*J. D. H.*

Fig. 1, Corolla; 2, stamen; 3, disk and nutlets:—*all enlarged.*



M.S.del. J.N.Fitch lith.

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PHILODENDRON Selloum.

Native of Brazil.

Nat. Ord. Aroideæ.—Tribe Philodendreæ.

Genus Philodendron, *Schott.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 978.)

Philodendron (Sphincterostigma) *Selloum*; caule subarborescente, ramulorum internodiis brevibus cicatricibus magnis radices longissimas emittentibus, vaginis (cataphyllis) magnis basi 2-carinatis, foliis subcoriaceis ovatis basi sagittatis profunde pinnatifidis, lobis posticis sensim in anticum transeuntibus 3–5-lobatis supra nitidis sinubus angustis, lobis obtusis cartilagineo-marginatis, nervis pallidis ultimis numerosissimis pellucidis, petiolo lamina breviore teretiusculo, spatha pedali breviter crasse pedunculata lineari-oblonga cuspidata crassissima, tubo vix distincto laminæ intus stramineæ concavæ æquilongo, spadicis crassi parte fœminea brevi crassa pro maxima parte spathæ adnata, parte mascula crassiore elongata obtusa, antheris angustis, ovariis brevibus sulcatis, stigmate crasso basi constricto sub 8-lobulato, lobulis obtusis, ovario 8-loculari, loculis pauci-ovulatis.

P Selloum, *C. Koch in Bot. Zeit.* vol. x. (1852), p. 277; *Ind. Sem. Hort. Barol.* 1853–54, *App.* p. 14, *et in Ann. Sc. Nat. Ser. IV.* vol. i. p. 351; *Schott, Synops. Aroid.* p. 109, *et Prodr.* p. 298; *Engler in Mart. Fl. Bras.* p. 169, t. 37, *et Monogr. Arac.* p. 430.

The genus *Philodendron* contains, according to Engler's monograph published in 1879, no less than 120 species, and if the little attention paid by collectors to these gigantic aroids, and the difficulty of preserving specimens of them be taken into account, it will be obvious that this number must represent but a small fraction of what exist. The genus abounds in the forests of tropical America and its islands, and like orchids, is better known from cultivated specimens than from descriptions made in their native habitats, or from herbarium specimens. Most of the known species have indeed been described by the late Dr. Schott, of the Imperial Gardens of Schœnbrunn (Vienna), who had imported many himself from the forests of Brazil, where they were a favourite study of his; and the long ranges of tall houses festooned from end to end with magnificent specimens of climbing species, on poles, trellises, and rafters, formed one of the most wonderful horticultural exhibitions

I ever beheld. In the Botanical Garden of Berlin and St. Petersburg they also form a great feature, and the aroid house at Kew is not inferior to these latter, though it never rivalled the Schœnbrunn collection. The Kew collection is greatly indebted to Mr. N. E. Brown, of the Herbarium, for its nomenclature; and a list of the species it contained was drawn up by him for the Report of the Royal Gardens during the year 1877; it included about 250 species, of which 42 belonged to the genus *Philodendron.*

P. Selloum was first flowered in this country by Mr. W. H. Tillett, of Sprowston Lodge, Norwich, who communicated fine specimens of it to me in 1873, and again in the present year, from which the plate here presented was made. It flowers in the spring months, and is an extremely handsome plant, having a powerful aromatic odour, especially at night. It is a native of humid forests in various parts of Brazil, from the Province of St. Paul to that of Minas Geraes, and also of Paraguay.

Descr. Tall, stout, subarborescent, scandent; branches with close-set scars, sending down long cord-like roots. *Leaves* one to two feet long, ovate with a hastate base, pinnatifid, dark shining green; pinnæ lobulate; lobules pointing forward, obtuse, nerves strong pale, nervules very slender. *Spathe* a foot long, on a very short stout peduncle, narrowly oblong, extremely thick, dark green externally, pale yellow within; tube rather narrower and about as long as the concave apiculate lamina. *Spadix* all pale yellow, very stout, as long as the spathe; female part short, adnate to the spathe; male portion long, stouter, obtuse. *Stamens* slender. *Ovary* short, deeply grooved, about eight-celled; stigma thick, contracted at the base, top concave, eight-lobed, lobes obtuse; ovules few in each cell.—*J. D. H.*

Fig. 1, Leaf, *reduced;* 2, portion of do., and 3, section of petiole, *both of natural size;* 4, spathe and spadix, *of the natural size;* 6, barren, and 7, perfect stamens; 8, ovary; 9, transverse, and 10, vertical section of do.; 11, ovules:—*all enlarged.*

1.

2.

M. S. del. J. N. Fitch lith.

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Tab. 6774.

CEREUS paucispinus.

Native of New Mexico.

Nat. Ord. Cacteæ.—Tribé Echinocacteæ.

Genus Cereus, *Haworth*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 819.)

Cereus (Echinocactus) *paucispinus;* humilis, crassus, ovoideus v. ovoideo-cylindraceus, perviridis, caule simplici v. parce ramoso sæpe deforme, costis 5–7 magnis latis interruptis, suleis sursum acutis, mamillis subhemisphericis discretis v. subconfluentibus lævibus, areolis spinigeris remotis, aculeis 3–7 robustis basi tuberosis radiantibus subrecurvis pallide rufo-fuscis v. brunneis demum nigrescentibus, centrali sæpissime v. rarius robusto subangulato atro-fusco sursum verso seu porrecto, floribus sub vertice lateralibus 2½–3 poll. diam., ovarii pulvillis 10–15 aculeolis 6–10 instructis, sepalis inferioribus triangulari-lanceolatis aculeiferis superioribus linearibus, petalis ad 30 erecto-patulis spathulatis apice rotundatis integris fusco-coccineis concavis, filamentis elongatis, antheris parvis purpureis, stigmatibus 8–10 erectis viridibus.
C. paucispinus, *Engelm. Cact. U. S. Mex. Bound. Surv.* p. 37, t. 56.

This plant was very imperfectly known at the date of its first publication by Dr. Engelmann, whose materials for the description and plate of it appear to have been very poor; nor should I have recognized it from the latter but for Mr. Loder, who sent it under what is no doubt its proper name. It is a native of the region bordering Mexico in the United States. Dr. Engelmann remarks that it grows on rocks and gravelly limestone hills, from the San Pedro to the mouth of the Pecos river, where it takes the place of the more western *C. polyacanthus*, which further east is represented by *C. Rœmeri*, and further west by *C. phœnicens*, from all which it is distinguished by the few ribs and few dark spines.

The Royal Gardens are indebted to E. G. Loder, Esq., for the specimen here figured, which flowered in May of the present year. Like most of the extra-tropical North American species of Cacti, it may be successfully cultivated in the climate of Surrey in a frame in the open air, where, however, attention must be paid to watering at the proper season only.

September 1st, 1884.

Descr. *Stems* five to nine inches high, by two to four in diameter, rather deformed, constricted and divided, deep dark green with five to seven grooves, separating thick irregular tumid hemispherical ridges one-half to three-quarters of an inch in diameter, with rounded tips; mamillæ sometimes hemispheric, at others elongate and confluent, smooth, crowned with a very small areola, from which the spines spring. *Spines* three to seven, stout, tumid at the base, radiating, straight or slightly recurved, pale red-brown; central one absent, or if present robust and darker than the others. *Flowers* axillary towards the top of the stem, three inches broad, two and a half in diameter. *Calyx-tube* subcylindric, with ten to fifteen clusters of short pale spines. *Outer sepals* oblong, obtuse, aculeate. *Petals* about thirty, elongate-spathulate, with concave rounded tips, suberect and spreading, dark red with a brown tinge. *Stamens* very numerous; filaments conniving in an elongated cone; anthers small, purple. *Stigmas* about ten, suberect, stout, green.—*J. D. H.*

Fig. 1, Bases of spines; 2, stigmas :—*both enlarged.*

M. S. del J.N. Fitch lith.

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TAB. 6775.

IRIS (XIPHION) TINGITANA.

Native of Marocco.

Nat. Ord. IRIDEÆ.—Tribe MORŒEÆ.

Genus IRIS, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 686.)

IRIS (Xiphion) *tingitana*; bulbo ovoideo tunicis exterioribus membranaceis rubros brunneis, caule valido monocephalo, foliis caulinis productis 5–6 linearibue glauco-viridibus profunde canaliculatis, spathæ valvis magnis lanceolatis apice et margine membranaceis, ovario cylindrico breviter pedicellato, perianthio tubo cylindrico ovario æquilongo, limbi violacei vel lilacini segmentis exterioribus falcatis obovatis unguiculatis, limbo conspicue luteo carinato ungui æquilongo, segmentis interioribus erectis oblanceolatis concoloribus, styli appendicibus magnis deltoideis plicatis, antheris magnis.

I. tingitana, *Boiss. et Reuter Pugillus*, p. 118.

I. Xyphium, *Schousb. Gew. Marok.* p. 15, *non Linn.*

XIPHION tingitanum, *Baker in Seem. Journ.* vol. ix. (1871), p. 13; *et in Journ. Linn. Soc.* vol. xvi. p. 123; *Ball in Journ. Linn. Soc.* vol. xvi. p. 675, *non Hook. f. in Bot. Mag.* t. 5981.

The large lilac-flowered Irises with a bulbous rootstock fall into two well-marked groups, firstly *Xiphion* and *aiphioides*, well known and widely cultivated in pre-Linnean times; and secondly, the less known, more recently described, and rarer Mediterranean types, *filifolia*, *Fontanesii*, and the present plant. The latter possess a distinct cylindrical tube to the perianth above the ovary, whilst in the former there is no tube between the ovary and the diverging segments of the limb. The present plant was discovered long ago by Schousboe and Salzmann in the neighbourhood of Tangiers, but has only lately been brought into cultivation. It was first imported by Mr. Geo. Maw, and has been flowered successfully by Messrs. Leichtlin and Elwes and Professor M. Foster. Our plate was drawn from a plant communicated by the latter, which he flowered in April, 1884. Besides the presence of the tube, it differs from *I. Xiphion* in the growing bulbs shooting in the spring and not in autumn, in the stouter leaves entirely hiding the

stem by their clasping bases, and in the much larger blade of the outer segments of the perianth. Prof. Foster calls attention to a point which has hitherto escaped notice, that whilst in *Xiphion*, *tingitana*, and *filifolia* the petaloid style is pressed tightly down against the claw of the outer segments, in *xiphioides* it is so much arched that a large insect can obtain easy access to the anther without forcing its way. It is very likely that these new Mediterranean types will prove more difficult to keep alive and to flower than their older-known allies.

The Tangiers plant figured as X. *tingitanum* in this work at Plate 5981 is a form of X. *filifolium*, which I have called *intermedium*.

Descr. *Bulb* ovoid, pointed; outer tunics thin, reddish-brown, with strongly-marked veins. *Stem* stout, terete, about two feet long, quite hidden by the bases of the clasping leaves. Produced *stem-leaves* six or seven, linear, falcate, the lowest a foot long, deeply channelled down the face, tapering to a point, pale glaucous green. *Flowers* two or three in a single terminal cluster; outer spathe-valves lanceolate, about four inches long, membranous at the margin and tip. *Ovary* cylindrical, one and a half or two inches long; pedicel short; perianth-tube cylindrical, as long as the ovary; limb bright lilac or purple; outer segments obovate unguiculate, three inches long, with a deflexed limb as long as the claw, with a bright yellow keel; segments lanceolate, concolorous, erect, as long as the outer. *Styles* with large deltoid erect plicate toothed appendages. *Anther* linear, much longer than the free filament.—*J. G. Baker.*

Fig. 1, Stamen; 2, stigma; 3, pedicel, ovary, and perianth-tube:—*life-size.*

M. S. del. J.N. Fitch lith.

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Tab. 6776.

RAVENEA Hildebrandtii.

Native of the Comoro Islands.

Nat. Ord. Palmæ.—Tribe Chamædoreæ.

Genus Ravenea, *Bouché*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 883, *nomen tantum.*)

Char. Gen.—*Flores* dioici (v. monoici), in spadicibus interfoliaceis simpliciter ramosis pedicellati, bracteolati, carnosuli. Fl. ♂. *Calyx* cupularis, 3-lobus. *Petala* 3, basi connata, ovato-oblonga, acuminata, sæpe 2-dentata, patentia, 3–5-nervia, valvata. *Stamina* 6, filamentis brevibus subulatis basi inter se et basi corollæ cohærentibus; antheræ oblongæ, basifixæ. *Ovarii* rudimentum minimum, globosum, trifidum. Fl. ♀ masculos subæquantes. *Calyx* cupularis, 3-lobus. *Petala* 3, oblongo-lanceolata, acuminata, 3–5-nervia, erecta. *Staminodia* 6, maxima, antheris magnis cassis. *Ovarium* lageniforme, 3-loculare, loculis 2 effœtis; stigmata late trigona, recurva; ovulum parietale, pendulum. *Fructus* (memoriter) parvulus, curvus, stigmatibus subbasilaribus. *Semen* minimum, ellipsoideum, hilo parvo, rapheos ramis nullis, albumine æquabili; embryo hilo proximus.—Palma *gracilis, erecta, inermis.* Folia *longe petiolata, primordialia bifida, petiolo plano-concavo, costa apice in filum excurrente; segmentis linear-lanceolatis acuminatis, costa subtus paleacea, paleis verticalibus oblongis laceris sæpe semi-lunatis.* Spadices *longe pedunculati; spathæ* 4, *tubulosæ, fusco-tomentosæ, persistentes; ♂ recurvi, ramis brevibus densifloris patentibus; ♀ erecti, rachi elongata, ramis filiformibus strictis basi incrassatis.* Flores *pallide straminei.* Fructus *niger.*—Wendl. MSS.

R. Hildebrandtii, *Bouché in Monats. Verein. Beford. Gartenb.* 1878, 197, 323, *cum ic. xylog.* 324. *Lemaire Ill. Hortic.* vol. xxvii. p. 164, *cum ic.*

A very elegant dwarf Palm, a native of the Comoro Islands, of which but little has hitherto been known, for in the publications cited above, no description is given of flower or fruit, and figures of palms without these are as valueless as are those of grasses similarly destitute of organs of fructification. The specimen cultivated at Kew flowered for the first time last summer, and when still a small (male) plant, standing on the shelf of the palm-house; and I immediately wrote to Mr. Wendland about it, who answered that he had materials for describing the female plant and fruit, and would forward these to me. This is the source of the full description of the genus given above, and it

only remains to add that *Rarenea* is allied to *Hyophorbe*, which differs in its robust habit, in being monœcious, and in the flowers being arranged in interrupted lines along the branches of the spadix which is infrafoliaceous. The name *Rarenea* was given by the late M. Bouché, who sent seeds to Mr. Wendland, who declined to name them without further materials. Unfortunately Mr. Wendland has mislaid the seeds, and gives the description of them from memory. He informs me that they are the smallest of the order in so far as he knows, as also that in the figure of the section of the ovary here given, fig. 9, the insertion of the ovules is wrong, for their point of attachment should be a little above the base of the cell. Mr. Wendland describes the genus as diœcious, but (as shown in figs. 3 and 4) male and hermaphrodite flowers occur on the same spadix.—*J. D. H.*

Fig. 1, Reduced figure of the whole palm; 2, portions of leaflets with paleæ on costa; 3, male, and 4, hermaphrodite flower; 5, calyx-tube; 6, bracteole; 7, petal; 8, ovary; 9, vertical section of ditto:—***all enlarged.***

M.S.del,J.N.Fitch lith.

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Tab. 6777.

PENTAPTERYGIUM SERPENS.

Native of the Eastern Himalaya.

Nat. Ord. Vacciniaceæ.—Tribe Thibaudieæ.

Genus Pentapterygium, *Klotzsch*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 572.)

Pentapterygium *serpens*; caudice tuberoso, ramis pendulis pedicellisque glanduloso-setosis, foliis parvis bifariis subsessilibus ovatis lanceolatis oblongisve acutis apices versus serratis, basi rotundatis v. acutis, floribus solitariis pendulis pedicellatis, calycis pentapteri dentibus ovato-lanceolatis demum acutis, corolla tubulosa 5-gona pilosa rubra dentibus recurvis, antheris dorso ecalcaratis, baccis pentapteris.

P. serpens, *Klotzsch in Linnæa*, vol. xxiv. p. 47; *Clarke in Fl. Brit. Ind.* vol. iii. p. 449.

Vaccinium serpens, *Wight Illustr.* t. 141 D, fig. 2, *et Ic. Pl. Ind. Or.* t. 1183; *Hook. f. Ill. Pl. Himal.* t. 15 B.

Thibaudia myrtifolia, *Griff. Notul.* vol. iv. p. 301, and *Ic. Plant. Asiat.* t. 510.

This is one of the many species of Indian Whortle-berries that most often affect an epiphytic habit; its great tuberous rootstock, sometimes two feet long, and several inches in diameter, nestling amongst the mosses and Hepaticæ of the limbs of the forest trees. In more open ground I have found it growing on moist rocks, and my impression is, that it is the favourable conditions of light and air to be found amongst the higher branches of the dark forests that account for these and several other species of *Vaccinieæ* and *Ericeæ* being comparatively rare on the ground, and common at heights of sixty feet and more above it. Other conspicuous examples are to be found amongst the *Rhododendrons*, as *R. Dalhousiæ*, *camelliæflorum*, *pendulum*, and *Edgeworthii*. These, however, are true *Ericeæ*, which do not form the tuberous stocks, as do certain species of *Vaccinium* and *Pentapterygium*.

P. serpens is a native of the humid forests of Sikkim and Bhotan, where it inhabits both the tropical and temperate regions, descending to 3000 feet, and ascending to 8000.

September 1st, 1884.

At the Royal Gardens the great rootstock is grown in a basket, from which the branches hang and flower in the month of May. The rootstock was sent from Darjeeling by Mr. Gammie.

Descr. *Rootstock* tuberous, one to two feet long, lobed, oblong or deformed, rooting into moss, &c. *Branches* pendulous, two to four feet long, slender, branched, and as well as the pedicels clothed with spreading gland-tipped stiff hairs. *Leaves* subbifarious, one-half to two-thirds of an inch long, subsessile, ovate lanceolate or oblong-ovate, acute, serrate towards the tip, coriaceous, evergreen, deep green, beneath paler; base rounded or acute; margins subrecurved. *Flowers* axillary, solitary; pedicels shorter than the leaves; bracts two, basal, small, oblong, pink. *Calyx-tube* shortly obovoid, five-winged, sparsely setose, especially along the wings; teeth shorter than the tube, ovate, subacute, setose or glabrous, enlarged in fruit. *Corolla* one to one and a quarter of an inch long, tubular, rather inflated, five-angled, pubescent, bright red, obscurely barred with darker red; teeth small, ovate, recurved. *Stamens* included, filaments very short, free, broad, incurved; anthers nearly as long as the corolla, very slender, produced into a more slender tube as long as the cells, each opening by a terminal slit; connective not spurred behind. *Style* straight, slender, included, stigma capitellate. *Berry* one-fourth of an inch in diameter, broadly obovoid, five-winged.—*J. D. H.*

Fig. 1, Rootstock, *reduced*; 2, portion of stem and leaf; 3, calyx and style; 4 and 5, stamen; 6, transverse section of ovary:—*all enlarged.*

M.S. del, J.N. Fitch lith.

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Tab. 6778.

HÆMANTHUS Katherinæ.

Native of Natal.

Nat. Ord. Amaryllideæ.—Tribe Amarylleæ.

Genus Hæmanthus, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 730.)

Hæmanthus (Nerissa) *Katherinæ;* glaberrima, foliis ad 5, vaginis in caulem cylindraceum convolutis, lamina membranacea elliptica acuta v. oblonga obtusa v. acuta nervis utrinque costæ 9–10 nervulis transversis trabeculata, scapo coætaneo laterali gracili elato, umbella ampla globosa densiflora, spathis 5–6 1–2-pollicaribus lanceolatis acuminatis deciduis, perianthii coccinei tubo 1½-pollicari limbi 2-poll. diametr. segmentis linearibus obtusis patentibus, staminibus 1½-pollicaribus.

H. Katherinæ, *Baker in Gard. Chron. N.S.* vol. vii. (1877), p. 656.

In Mr. Baker's notes on the allies of *Hæmanthus multiflorus*, Martyn (see this work, plates 961 and 1995), published in the "Gardeners' Chronicle," this grand species is first described, and stated to be closely allied to the above-named plant, differing in the nervation of the leaf and proportion in length of the tube to the limb of the corolla, to which might be added that the spathes of *H. multiflorus* are few, large, green and herbaceous. Both belong to the section *Nerissa*, of which Salisbury constituted the genus of that name, confining it, however, to *N. multiflora*, for he would not have included in it (as Mr. Baker does) two species with the scape rising from amongst the leaves, viz. *H. cinnabarinus* (Plate 5314) and *H. rotularis*, Baker. Indeed, in the "Genera Plantarum," Mr. Bentham and I have suggested that the genus *Hæmanthus*, of which there are thirty known species, all tropical and Southern African, should be divided into those with terminal scapes and those with lateral.

H. Katherinæ was introduced by Mr. Keit when Superintendent of the Botanical Gardens at Natal, but dried specimens had been collected and sent to Kew by Mr. Saunderson, who requested that it might bear the name of his wife. For the plant here figured the Royal Gardens

are indebted to W. B. Lyle, Esq., of Kirkley Vale Estate, Natal. It flowered in May profusely, but the scape, which in our specimen is no thicker than the little finger, is as thick as a child's wrist in a plant which flowered in Mr. Gumbleton's garden, near Cork, and of which that gentleman kindly sent a drawing to Kew.

Descr. *Bulb* globose, one and a half to three inches in diameter. *Leaves* three to five, their sheaths forming an erect stem stouter than the scape; blade six to fourteen inches long by two to five inches broad, elliptic-lanceolate or oblong, base and tip acute or rounded, substance thin, with nine to ten stout nerves on each side of the stout midrib, joined by numerous straight transverse nervules, pale bright green. *Scape* ten to twelve inches high, one-half to one inch in diameter, green and spotted with brown. *Umbel* globose, five to seven inches in diameter, many- and dense-flowered; spathes about an inch long, lanceolate, acuminate, membranous, deciduous; pedicels short. *Flowers* scarlet; perianth-tube an inch long or more, segments one to one and a quarter inch long, linear, obtuse, spreading, at length reflexed. *Stamens* nearly two inches long, straight; anthers small, linear. *Style* very slender, twisted. —*J. D. H.*

Fig. 1, Reduced figure of the plant; 2, section of tube of corolla, with segment and stamen; 3 and 4, anthers; 5, ovary and style; 6, transverse section of ovary: —*all enlarged.*

M.S. del. J.N. Fitch lith.

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Tab. 6779.

CORYLOPSIS HIMALAYANA.

Native of the Eastern Himalaya and Khasia Mountains.

Nat. Ord. Hamamelideæ.

Genus Corylopsis, *Sieb. et Zucc.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 667.)

Corylopsis *himalayana*; frutex ramis lenticellatis, ramulis petiolis pedunculisque stellato-pubescentibus, foliis late ovatis v. ovato-cordatis acuminatis serratis supra glabris rugosis subtus sericeo-pilosis v. tomentosis, racemis brevibus sericeis densifloris pendulis, petalis spathulatis.

C. himalayana, *Griff. in Journ. As. Soc. Beng.* vol. xxiii. p. 64; *et icon* (*C. grata*), *Hook. f. et Thomson in Journ. Linn. Soc.* vol. ii. p. 85; *Hook. f. Fl. Brit. Ind.* vol. ii. p. 427.

Hamamelida, *Griff. Ic. Plant. Asiat.* t. 633.

A singularly delicate and graceful shrub, closely allied to *Hamamelis*, and like it, flowering in early spring or late winter (February), and unfolding its beautiful foliage in June. It belongs to a small genus confined to Eastern Asia, of which four species are known, *C. spicata*, Sieb. and Zucc., from Japan, figured in this work at Plate 5458; *C. pauciflora*, Sieb. and Zucc., also from Japan; *C. multiflora*, Hance, from China; and the present plant, which is very near indeed to the Chinese one, differing in the much narrower petals. The flowers of both *C. spicata* and that figured here have a primrose smell.

C. himalayana is a native of the eastermost mountains of India, having been discovered by Griffith in Bhotan, north of the Assam valley, at elevations of 5000 to 8000 feet; and afterwards found by himself and others in the Khasia Mountains, south of the Assam valley, at lower elevations, of 4000 to 6000 feet. There I have seen it forming a small tree twenty feet high, or a nut-like bush with leaves sometimes six inches long and nearly as much in diameter. It was introduced into English gardens by Dr. King, who sent seeds to Kew in 1879, and we have also received plants from Messrs. Veitch.

Descr. A shrub or small tree, of hazel-like habit and

foliage; branches covered with lenticels; branchlets, petioles and peduncles stellately pubescent or tomentose. *Leaves* long-petioled, four to seven inches long, sometimes almost as broad, broadly ovate or almost orbicular, acuminate, finely serrate, pale green and rugose above, glaucous and more or less silkily pubescent beneath; base rounded or shallowly or deeply cordate; nerves strong, nearly straight; petiole one and a half to three inches long; stipules linear-oblong, acuminate, one inch long, deciduous. *Flowers* pale primrose, in pendulous peduncled dense-flowered racemes one to two and a half inches long; pedicels sheathed with deciduous concave oblong bracts one-half to three-quarters of an inch long; floral bracts shorter. *Calyx* short, cupular, silky; lobes ovate-lanceolate. *Corolla* half an inch in diameter; petals distant, spreading, spathulate. *Stamens* five; filaments short, erect, subulate; anthers small, orange-yellow; staminodes ten, columnar, with recurved tips. *Ovary* two-celled; styles two, erect, slender, with small recurved stigmatic spathulate tips; cells one-ovuled.—*J. D. H.*

Fig. 1, Flower; 2, bracts; 3, calyx, staminodes, and styles; 4, stamen; 5, staminodes; 6, vertical section of ovary:—*all enlarged.*

A.B. del, J.N. Fitch lith.

Vincent Brooks Day & Son Lith.

Tab. 6780.

PYRUS (Cydonia) Maulei.

Native of Japan.

Nat. Ord. Rosaceæ.—Tribe Pomeæ.

Genus Pyrus, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 626.)

Pyrus (Cydonia) *Maulei*; frutex spinosus glaberrimus, foliis obovatis crenatis apice rotundatis basi cuneatis in petiolum angustatis, floribus subsessilibus fasciculatis, calycis lobis rotundatis ciliatis deciduis, petalis unguiculatis obovato-spathulatis concavis coccineis v. rubro-aurantiacis, stylo glaberrimo gracile elongato supra medium 2–5-fido ramis gracilibus, fructu globoso aurantiaco v. aureo basi et apice profunde intruso extus viscidulo.

P. Maulei, *Masters in Gard. Chron. N.S.* vol. ii. (1874), p. 756, t. 159, *et* vol. iii. p. 744, f. 144.

This is one of the most valuable additions to the shrubberies of England that has been introduced within the last decade of years, for it was in 1874 that it was first made known from plants introduced by Messrs. Maule and Sons, of Bristol, and which were appropriately named after the head of the firm by Dr. Masters, with a full description and figure in the "Gardeners' Chronicle." Whether, however, it will prove as distinct from the old *P. japonica* as Dr. Masters thinks it is, may be doubtful; if it be so, the principal character is probably in the fruit, which is in this globose and of a bright yellow with scarce any trace of angles, whilst in *P. japonica* it is longer, more ovoid, distinctly five-angled, and of a very different texture and taste. As to the fruit, however, it is a suspicious circumstance that in the figure of it which accompanied that of the drawing which Messrs. Maule received from Japan, it is represented as cylindric oblong, truncate, and slightly umbilicate at both ends, deeply longitudinally ribbed, and yellow dotted with red, characters wholly at variance with that of plants ripened in England, whether by Mr. Maule and well figured in the Chronicle, at fig. 144, or at Kew and here figured, which agree remarkably well together. Again, the petals of *P. Maulei* are described as orange-red,

and as concave in contrast to the flat petals of *P. japonica*, whereas in the plant here figured they are nearly as bright red as in *P. japonica*, and the petals of the latter are often as concave. The foliage appears to be the same in both, but *P. Maulei* flowers later; early in April at Kew. I fail to find the prominent membranous ring described as dividing externally the base of the flower-tube from the ovary in living specimens of *P. Maulei*, though it is usually but not constantly present in dried ones; I, however, find traces of it also in dried specimens of *P. japonica*. Taking therefore into account such diversity in form and colour of fruit in the *Pomaceæ* as any collection of apples and pears shows, and the known variability of *Pyrus japonica*, I cannot but think it more probable than not that *P. Maulei* is a cultivated variety of that plant.

Whether species or variety, *P. Maulei* is a very well-marked form, and nothing of the kind can exceed the beauty of its golden fruit, which in appearance are to common quinces what the golden pippins are to other apples, though differing from these latter in the skin being slightly viscid and not shining. Dr. Masters says that they are described as richly perfumed and very agreeable to the palate; the perfume is certainly grateful though faint, and my experience of the taste agrees with that author's, for they are excessively acid; they may, however, make a good conserve.—*J. D. H.*

Fig. 1, Flower with long 2-branched style cut vertically; 2, similar section of calyx and ovary of flower with short 5-branched style; 3, stamen; 4, style-arm and stigma; 5, transverse, and 6, vertical section of fruit:—*all but 5 and 6 enlarged.*

A B del. J N Fitch.

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Tab. 6781.

CHRYSANTHEMUM CINERARIÆFOLIUM.

Native of Dalmatia.

Nat. Ord. Compositæ.—Tribe Anthemideæ.

Genus Chrysanthemum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 424.)

Chrysanthemum (Pyrethrum) *cinerariæfolium*; caulibus erectis gracilibus monocephalis superne longe nudis foliisque subtus subsericeis, foliis gracile petiolatis pinnatisectis supra glabris glanduloso-punctatis, segmentis angustis elongatis pauci-lobatis pinnatifidis v. pinnatisectis obtusis v. acutis patentibus, capitulis 1½ poll. latis, involucro late cupulari, bracteis oblongis apicibus rotundatis scariosis albis, corollis radii albis disci flavis, receptaculo nudo, acheniis angustis angulatis glandulosis, pappo cupulari.

C. cinerariæfolium, *Visiani Fl. Dalmat.* vol. ii. p. 88; *Bocconi, Mus. di piante rar.* (1697), p. 23, t. 4 et 131.

C. rigidum, *Visiani delect. Sem. Hort. Pat.* (1825).

C. Turreanum, *Visiani Stirp. Dalmat. Spec.* p. 19, t. 8 (1826).

Pyrethrum cinerariæfolium, *Trevir. Ind. Sem. Hort. Vrat.* 1820; *Act. Soc. Nat. Cur.* vol. xiii. p. 204 (1826); *Reichenb. Iconogr. Bot. Exot.* t. 36; *Fl. Excurs.* vol. ii. p. 31; *Loring, in Reports of U.S. Commission of Agriculture*, 1881–2, p. 76, t. 4.

Matricaria Bellidis flore, *Turr. Cat. Hort. Pat.* p. 63 (1660).

The plant here figured is that which yields the famous Dalmatian insecticide powder, now so universally used, and the flowers of which are said to be the most valuable product of its native country, where it is also cultivated. It must not be confounded with the Caucasian insecticide *Pyrethrum roseum*, which is cultivated in France. A very valuable paper by G. B. Loring, on the cultivation in the United States of both these insecticides, with copious notes on the mode of application of their powder and preparations of it to insects that infest plants, is given in the Report of the U.S. Commission of Agriculture, cited above. From this document it appears that the powder of both species is valuable as a general insecticide, especially in a liquid solution, but that it is not a universal remedy, and has serious disadvantages. Of the advantages, the most notable is that it is a specific in the case of Aphides, house flies,

and mosquitoes (or gnats), and if used with a pair of ordinary bellows is very effectual in killing the commoner insects that infest plants in rooms and houses. The powder burnt is not disagreeable to smell, and very effectual in rooms, wardrobes, and green-houses. The alcoholic extract of the powder diluted in water, the simple solution in water, and the decoction in water, are all most useful in cases where the powder may be less effectually applied. The disadvantages are, that the result is not permanent; after half an hour insects may reappear on the plants that had been cleared, and be unhurt. Again, actual contact with the insect is necessary in the open air; and powdering the upper side of a leaf has no effect on an insect on the under side. More important still are the facts that it has no effect on insects' eggs, or hard chrysalises, on beetles with hard elytra, and on that vast class of hemiptera (true bugs); whilst hairy caterpillars and spiders of all kinds are proof against it. Hymenoptera again quickly succumb to its effects.

The *C. cinerariæfolium* is an old inhabitant of botanical gardens, flowering in July and August; but it has not been known till comparatively recently that it is the source of the Dalmatian insecticide. The correct specific name to be taken is disputable. That of *Chrysanthemum cinerariæfolium* is the earliest, but is only a part of a descriptive phrase, and is anti-Linnæan; *C. rigidum*, Visiani, is the first reference of the plant to the modern genus *Chrysanthemum*, but this was altered by Visiani himself, first to *C. Turreanum*, and then to *C. cinerariæfolium*, giving himself as authority for the latter, which, I think, is the most convenient to adopt.—*J. D. H.*

Fig. 1, Receptacle; 2, flower of ray; 3, its style-arms; 4, flower of disk; 6, its stamens and style; 7, its style-arms:—*all enlarged.*

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TAB. 6782.

STREPTOCARPUS KIRKII.

Native of Tropical Eastern Africa.

Nat. Ord. GESNERACEÆ.—Tribe CYRTANDREÆ.

Genus STREPTOCARPUS, *Lindl.*; (*Clarke Monogr. Cyrtandr.* p. 148.)

STREPTOCARPUS *Kirkii*; pubescens, caule elongato erecto folioso robusto, foliis petiolatis oppositis ovato-cordatis obtusis suberenatis supra pilosis, pedunculis gracillimis, cymis laxiflоris dichotomis, pedunculis pedicellisque gracilibus, bracteis parvis subulatis, calycis parvi lobis acutis, corolla tubuloso-campanulatis incurva puberula, tubo ½-poll. longo, lobis rotundatis ciliolatis, capsula pollicari gracile.

A very elegant species, allied to *S. caulescens*, Vatke, of which it may be a variety, differing chiefly in the shorter leaves with rounder apices and the broader tube of the corolla. As I have seen only indifferent dried specimens of *S. caulescens*, and only cultivated ones of *S. Kirkii*, there is room for doubt as to the limits of variation in both. It belongs to a small section of the genus with leafy stems of which the species, five in number, inhabit Eastern Africa and Madagascar; whilst their congeners, of which there are eleven, are nearly all natives of extratropical South Africa. Of the first group no species had hitherto been figured, whilst of the second and larger, there are in this work *S. polyantha*, tab. 4850, *S. Saundersii*, tab. 5251, *S. Rexii*, tab. 3005, and *S. Gardeni*, tab. 4862.

S. Kirkii is a very elegant species, sent by our indefatigable correspondent, Sir John Kirk, from the hilly country of the coast opposite Zanzibar;—at least so it may be assumed, for it came up in the earth surrounding the roots of some ferns in a Ward's case sent by Sir John with plants from that coast, in which he had, with characteristic foresight, sowed seeds of plants of which he had no herbarium specimens worth sending. The seedlings arrived in 1882, and the plants flowered in March, 1884. *Gladiolus Quartinianus* (tab. 6739) came in the same case.

OCTOBER 1ST, 1884.

Descr. *Stem* four to six inches high, stout, erect, cylindric, hairy, leafy. *Leaves* opposite, with leafy buds in all the axils, one and a half to two inches long, broadly ovate, obtuse, crenate, rather thick, finely pubescent on both surfaces, base rounded or cordate; petiole one-third to half an inch long. *Scapes* axillary, very slender, three to four inches long, hairy, dichotomously branching into a very lax pubescent cyme with slender branches and pedicels. *Flowers* drooping, opposite. *Calyx* one-tenth of an inch long, cleft to the middle into erect lanceolate lobes, pubescent. *Corolla* three-quarters of an inch long, pale lilac; tube hairy, upcurved, broad and subcampanulate, mouth expanded, lobes short rounded ciliolate. *Stamens* two, in the middle of the tube, filaments very short; anthers broadly ovate. *Ovary* pubescent, contracted into a straight style with a broad disciform stigma. *Capsule* about an inch long, very slender, straight, twisted, acuminate.—*J. D. H.*

Fig. 1, Corolla laid open; 2 and 3, stamens; 4, calyx and ovary:—*all enlarged.*

M.J. Wood Del. et Lith.

Vincent Brooks Day & Son Lith.

L Reeve & Co. London.

Tab. 6783.

CRINUM LEUCOPHYLLUM.

Native of Damara-land.

Nat. Ord. Amaryllideæ.—Tribe Amaryllæ.

Genus Crinum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 726.)

Crinum (Stenaster) *leucophyllum*; bulbo magno ovoideo tunicis membranaceis brunneis imbricatis, foliis productis 12–14 distichis lanceolatis squarrosis albo-viridibus semipedalibus vel bipedalibus margine denticulatis, scapo laterali pedali crasso valde ancipiti, umbellis 30–40-floris, spathæ valvis lanceolato-deltoideis, bracteolis membranaceis lineari-subulatis, pedicellis productis, floribus rubellis suaveolentibus tubo cylindrico tripollicari, limbi segmentis patulis linearibus tubo brevioribus, genitalibus segmentis brevioribus, antheris parvis.

This is a very curious new *Crinum* of the *asiaticum* group. As Central Africa gets gradually explored, it proves to be the great head-quarters of the genus. The bulb of the present plant was brought from Damara-land in 1880 by a Danish sea captain of the name of Thurè Gustave Ein. It was purchased for the Kew collection, and flowered for the first time in August, 1881, when the accompanying plate was drawn. It is peculiar for its very large bulb, very stout short flattened peduncle, numerous whitish-green distichously arranged leaves, and very numerous fragrant pink flowers. Its nearest allies are *C. Tinneanum*, from Kordofan, and *C. Bainesii* from Koobie, neither of which has been brought into cultivation, and a new species sent home alive lately by Sir John Kirk from the Kassine Mountains, a hundred miles inland from Zanzibar, which will be described shortly under the name of *Crinum Lastii*, after the gentleman by whom the bulbs were procured.

Descr. *Bulb* ovoid, nearly half a foot in diameter, with many brown membranous tunics truncate at the top. Produced *leaves* twelve or fourteen, arranged in a distichous column a foot long, lanceolate, one and a half to two feet long, five or six inches broad, squarrose, whitish-green,

glabrous, denticulate at the margin. *Scape* issuing from the top of the bulb below the column of leaves, spreading about a foot long, above an inch thick, very much flattened. *Flowers* pinkish, fragrant, arranged forty or fifty in a dense centripetal umbel; pedicels sometimes above an inch long; spathe-valves lanceolate-deltoid; bracteoles linear-subulate, membranous. *Perianth* with a cylindrical tube three inches long; segments of the limb spreading horizontally, linear, rather shorter than the tube, channelled down the face. *Stamens* a little shorter than the perianth-segments; anthers small, linear-oblong, versatile. *Style* reaching to the tip of the stamens; stigma capitate.—*J. G. Baker*.

Fig. 1, Whole plant, *much reduced in size*; 2 and 3, anthers; 4, apex of style with stigma, *enlarged*.

M.S. del, J.N. Fitch, lith.

Vincent Brooks Day & Son Imp.

TAB. 6784.

DENDROBIUM ADUNCUM.

Native of China.

Nat. Ord. ORCHIDEÆ.—Tribe EPIDENDREÆ.

Genus DENDROBIUM, *Swartz*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 498.)

DENDROBIUM (Stachyobium) *aduncum;* caulibus elongatis gracilibus demum flexuosis pendulis, internodiis elongatis non incrassatis, foliis distichis elliptico-lanceolatis acutis v. acuminatis, vaginis internodiis æquilongis, floribus solitariis v. in racemos paucifloros breves dispositis, sepalis petalisque ovatis obtusis acutisve pallide roseis, mento rotundato subinflexo, labello unguiculato albo subhemispherico apice in caudiculam brevem angustato intus villoso disco glaberrimo marginibus ciliatis, columna brevi crassa 2-alata sub stigmate villosa, anthera purpurea glandulosa antice barbata.

D. aduncum, *Wall. MSS. ex Lindl. in Bot. Reg.* 1842, *Misc.* p. 58, No. 62, *et* 1846, t. 15; *Walp. Ann.* vol. vi. p. 295.

Though the plant here figured differs from the *D. aduncum* figured and described by Lindley in having solitary instead of racemed flowers, the two plants so perfectly agree in habit, foliage, and every other particular, that I cannot doubt their identity. Nor is there any other species with which this can be confounded; the shape of the lip, its fimbriation, the glandular purple anther and bearded column, are all very distinctive characters. Lindley says of it that it is in some respects allied to *D. Pierardi*, especially in its small pink flowers and manner of growth; but that it is more closely allied to *D. moschatum*, of which it may be regarded as a feeble imitation; it is widely different from both, and is especially known by its half-transparent flowers of the most delicate texture and clearest tints.

It is a remarkable fact that though first published forty years ago, the native country of *D. aduncum* has hitherto been a mystery, Wallich having sent it from India under the name it bears with no further information. This desideratum we can now supply, our specimen having been received from Mr. Charles Ford, superintendent of the

Hong Kong Botanical Gardens, who found it on a most interesting expedition which he made into the Lo-fau-Shan Mountains, on the coast opposite Hong Kong; an expedition which resulted in the discovery and transmission to England of the plant yielding the true Cassia bark of commerce, the origin of which was previously unknown, though the bark has been in use from the earliest historical period.

Dr. Wallich probably procured *D. aduncum* through his Canton or Macao correspondents. The name *aduncum* (hooked), of which Dr. Lindley says "why it is called *aduncum*, or whence it comes, we know not," no doubt applies to the hook-like tip of the lip.

D. aduncum flowered in Kew in July of this year, the specimen having been imported in the previous year. It was in cultivation many years ago, Dr. Lindley having received it from Messrs. Loddiges in 1842, and from Messrs. Veitch in 1846.

Descr. *Stems* one to two feet long, slender, pendulous, at length flexuous; internodes one to one and a half inch long, not thickened, grooved towards the base. *Leaves* two and a half to three inches long, sessile, distichous, elliptic-lanceolate, acute, green above, red-brown beneath; sheath nearly as long as its internode, speckled. *Flowers* drooping, solitary, or in few-flowered short racemes from the nodes, peduncle and pedicels slender. *Perianth* one to one and a quarter inch in diameter, very concave, pale rose-colour, transparent. *Sepals* erecto-patent, ovate, acute, lateral falcate narrower than the dorsal. *Petals* oblong, acute. *Lip* smaller than the petals, white, clawed, shortly boat-shaped or hemispheric, terminating abruptly in a short hooked tip, villous within except on the disc, margins ciliate. *Column* very short, villous in front beneath the stigma, two-winged, wings crenate at the tip. *Anther* dark purple, glandular, villous in front.—*J. D. H.*

Fig. 1, Portion of sepal and lip; 2, column; 3, lip; 4, anther; 5, pollen:—*all enlarged.*

M.S. del. J.N. Fitch lith.

Vincent Brooks Day & Son Imp.

L. Reeve & Co. London.

Tab. 6785.

PINGUICULA HIRTIFLORA.

Native of Italy and Greece.

Nat. Ord. Lentibulariæ.

Genus Pinguicula, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 988.)

Pinguicula *hirtiflora;* tota glandulosa, foliis oblongis v. lineari-lingulatis sessilibus v. in petiolum angustatis obtusis v. retusis, scapis hirtis, calycis glandulosi segmentis oblongis obtusis, corolla lilacina v. rosea glabra v. sparse glandulosa, labii superioris lobis integris, inferioris lobis majoribus, fauce lutea, calcare subulato recto v. incurvo, capsula globosa calyce breviore.

P. hirtiflora, *Tenore Fl. Neap. Prodr.* p. vi.; *Fl. Nap.* vol. iii. p. 18, t. 201; *Boiss. Fl. Orient.* vol. iv. p. 2.

P. megaspilæa, *Boiss. et Heldr. MSS.*

P. albanica, *Griseb. Spicileg. Fl. Rumel.* vol. ii. p. 9.

P. lusitanica, *Salzm. Pl. Cors. exsicc.; Reichb. Pl. Crit.* vol. i. p. 70, t. 84.

P. vulgaris, *Salis Marschl. Enum. Pl. Cors. in Flora,* 1834, vol. ii. *Beibl.* p. 14; *A. DC. Prodr.* vol. viii. p. 28.

The pretty little plant here figured has been much misunderstood by authors, as its synonymy shows, due, no doubt, to the difficulty of examining it in a dry state. Its nearest northern ally is *P. vulgaris*, which differs in the bright blue colour of the flower, and the retuse lobes of the corolla, as also in its less globose capsule. Tenore, indeed, describes the flowers of *P. hirtiflora* as azure; but this appears to be a mistake; Boissier says they are lilac or rose-colour, as does J. Gay in a manuscript note in his Herbarium.

P. hirtiflora is a mountain plant of rather restricted geographical range. Corsica is its eastern limit; it is found in several places in the province of Naples; it occurs in Herzegovina, Albania, and various parts of Greece, where it attains 6000 feet elevation; the Balkan is its northern limit, and the Island of Poros its eastern.

For the specimen here figured the Royal Gardens are indebted to Miss E. M. Owen, of Gorey, Ireland; they flowered in a cool pit in the month of February.

November 1st, 1884.

Descr. *Leaves* one to two and a half inches long, oblong or broadly lingulate, obtuse, sessile, or narrowed into a short broad petiole, glandular and obscurely puberulous, pale green, margins of young incurved, of old flat. *Scapes* three to four inches high, slender, shortly hairy and glandular, especially above. *Flowers* two-thirds of an inch in diameter. *Calyx* small, segments of upper lip oblong, obtuse, glandular-hairy and -ciliate; lower lip two-fid, shorter than the upper. *Corolla* lilac or rose-coloured; tube white, inflated, suddenly contracted into the straight or curved subulate spur; two upper lobes almost rounded, three lower larger rather truncate; throat yellowish. *Stamens* small; anthers globose. *Ovary* globose; lower lobe of stigma broad, rounded, upper lacerate, with a spiniform central process. *Capsule* globose, rather shorter than the calyx.—*J. D. H.*

Fig. 1, Calyx and ovary; 2, front, and 3, back view of stamens; 4, ovary; 5, young capsule:—*all enlarged.*

M.S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son lith.

L. Reeve & Co. London.

Tab. 6786.

TULIPA PRIMULINA.

Native of Algeria.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Tulipa, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 818.)

Tulipa *primulina*; humilis, glabra, bulbo ovoideo tunicis exterioribus castaneis acuminatis intus adpresse pilosis, foliis 3–6 linearibus confertis viridibus, pedunculo erecto unifloro, floribus suaveolentibus primulino-luteis, perianthii infundibularis segmentis conformibus oblongo-lanceolatis acutis, exterioribus dorso rubellis, interioribus basi pilosis, staminibus perianthio duplo brevioribus, filamentis basi dense barbatis, ovario ampullæformi, stigmatibus minutis.

T. primulina, *Baker in Gard. Chron.* new series, vol. xviii. p. 8, vol. xx. p. 233.

This interesting new Tulip was discovered by Mr. Elwes, in May, 1882, in the Aures Mountains, three hours' journey west of Batna, in Eastern Algeria. It was growing on the ridges and in the open glades of a cedar forest, at an elevation of about 6000 feet above sea-level. The same or a closely-allied species was found by Mr. W. Hammond at Elkantara, thirty miles further into the interior, on the border of the Sahara. Its affinity is with the widely-spread South European *T. australis* (*T. Breyniana*, Bot. Mag., tab. 717), and with the rare lowland Algerine *T. fragrans*, of Munby. These Tulips are many of them closely allied to one another, and they soon alter their stature and other characters under the influence of cultivation.

Descr. *Bulb* ovoid, an inch in diameter; outer tunics chestnut-brown, acuminate, thinly clothed inside with short adpressed hairs. *Stem* one-flowered, glabrous, under a foot long. *Leaves* three to six, crowded near the base of the stem, linear, glabrous, channelled down the face, reaching a length of six or eight inches. *Peduncle* glabrous, erect, half a foot long in the cultivated plant. *Flower* very fragrant. *Perianth* funnel-shaped, an inch and a half long in the cultivated plant, pale primrose-yellow, [illegible] two rows

of segments nearly uniform in shape, oblong-lanceolate, acute, the outer more or less suffused with red on the back, the inner hairy at the base. *Stamens* about half as long as the perianth; anthers linear-oblong, orange-yellow; filaments densely hairy at the base. *Ovary* ampullaeform, narrowed to the apex; stigmas very small.—*J. G. Baker.*

Fig. 1, Base of an inner segment of the perianth, 2 and 3, stamens; 4, ovary and stigmas:—***all more or less enlarged.***

TAB. 6787.

IRIS HEXAGONA.

Native of the Southern United States.

Nat. Ord. IRIDEÆ.—Tribe MORÆEÆ.

Genus IRIS, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 686.)

IRIS (Apogon) *hexagona*; rhizomate crasso breviter repente, foliis ensiformibus viridibus, basalibus 2–3-pedalibus, caulinis elongatis, spathis sæpissime bifloris, spathæ valvis exterioribus oblongo-lanceolatis magnis, pedicello producto, ovario cylindrico hexagono, perianthii tubo brevi subcylindrico, limbo magno saturate lilacino, segmentis exterioribus obovato-unguiculatis, limbo patulo luteo carinato ungui æquilongo, segmentis interioribus oblanceolatis erectis exterioribus paulo brevioribus, stylo ungui æquilongo appendicibus deltoideis, antheris magnis filamento longioribus.

I. hexagona, *Walt. Fl. Carol.* p. 66; *Elliot Bot. South Carol.* vol. i. p. 46; *Chapm. Fl. South United States*, p. 472; *Baker in Gard. Chron. N. S.* vol. vi. p. 615; *Journ. Linn. Soc.* vol. xvi. p. 461.

I. virginica, *Michx. Fl. Bor. Amer.* vol. i. p. 22; *Pursh Fl. Bor. Amer.* vol. i. p. 29, *ex parte.*

This is a very distinct tall showy species of Iris, widely spread through the Southern United States, where it represents geographically its near allies, the more northern *Iris versicolor* and the Californian *I. longipetala* (Bot. Mag., tab. 5298). As it is restricted to the Southern States, it probably will not grow with us successfully out of doors, but that still remains to be tried. At any rate it is a valuable acquisition to our stock of the cultivated species. It was introduced by Professor M. Foster, and it was from a specimen that he exhibited in June at the Royal Horticultural Society that our plate was drawn.

DESCR. *Rootstock* creeping, thicker than a man's thumb. *Flowering-stem* two or three feet long, stout, erect, bearing two or three clusters of flowers, generally with two in each. *Leaves* green, ensiform, those of the base two or three feet long, an inch broad; those of the stem much overtopping the flowers. Outer *spathe-valves* oblong-lanceolate, green, three to six inches long. *Flowers* scentless, bright lilac. *Pedicel* and six-angled cylindrical ovary each about an inch

long. *Perianth-tube* green, subcylindrical, under an inch long; outer segments three inches long, with an obovate blade an inch or an inch and a quarter broad, with a bright yellow keel, about equalling in length the ascending claw; inner segments oblanceolate, erect, concolorous, rather shorter than the outer. Petaloid *style* equalling in length the claw of the outer segments; crests deltoid, reflexing. *Anther* an inch long, much exceeding the flattened filament. —*J. G. Baker.*

Fig. 1, Anther; 2, stigma :—*both enlarged.*

M. S. del, J. N. Fitch, lith.

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L. Reeve & Co. London.

Tab. 6788.

HYDRANGEA petiolaris, *Sieb. et Zucc.*

Native of Japan.

Nat. Ord. Saxifrageæ.—Tribe Hydrangeæ.

Genus Hydrangea, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 640.)

Hydrangea *petiolaris*; frutex alte scandens, glaber v. pubescens, ramis radicantibus glabris, foliis longe petiolatis ovato- v. rotundato-cordatis ellipticisve acuminatis argute serratis, axillis subtus barbatis, cymis amplis terminalibus planis pubescentibus ramulis elongatis, bracteis amplis submembranaceis ellipticis caducis, floribus sterilibus (cyma extimis) longe pedicellatis, sepalis 3–4 rotundatis integris v. subdentatis, floribus fertilibus alabastro globosis, calycis dentibus deciduis petalis calyptratim cohærentibus, staminibus 15–20, capsula globosa.

H. petiolaris, *Sieb. et Zucc. Fl. Jap.* p. 113, t. 59, fig. 2; *Franchet et Savat. En. Pl. Jap.* vol. i. p. 153.

H. scandens, *Maxim. Revis. Hydrang. As. Orient.* (*in Mem. Acad. Imp. Sc. Petersb.* ser. vii. vol. x.), 16.

H. cordifolia et bracteata, *Sieb. et Zucc.* l. c. p. 106, t. 54; p. 176, t. 92.

A common plant in the subalpine districts of Japan, and extending to the Island of Sachalin. It is a very near ally of the Himalayan *H. altissima*, Wall (Fl. Brit. Ind. vol. ii. p. 404), which only differs in having larger buds and ten stamens, and it is very probable that intermediate forms will be found in China. Both present the remarkable character (so common in *Vitis*) of the petals cohering into a small extinguisher-like cap, and both climb lofty trees by adventitious roots developed on the trunk and branches, of which economy the *Dichotrichum* figured in this very number (Plate 6791) offers a parallel. Maximovicz describes the stamens as fifteen, but there are as many as twenty in the Kew plant.

H. scandens is a free grower in a cool conservatory, and if planted in the ground, and provided with a support, will attain a considerable size. The Kew specimen is thus treated in the Temperate House, where it has been grown on the trunk of a tree-fern (*Dicksonia antarctica*), flowering in April and May. It has been twice received at Kew, first from

M. Max Leichtlin (in 1878), that here figured, and more recently in M. Joad's collection. In both cases it was named *Schizophragma hydrangeoides* (a very different plant).

Descr. *Trunk* slender, branching, and as well as the branches rooting like the ivy against its support, glabrous or hairy; flowering branches free. *Leaves* two to four inches long, broadly ovate-cordate or rounded or elliptic, acute or acuminate, finely serrate, membranous, dark green above, paler beneath, where the nerves are bearded in the axils; petiole slender, one to three inches long, globose or pubescent. *Cymes* eight to ten inches in diameter, flat-topped, with slender straggling radiating divaricating branches. *Outer-* or *radiating-flowers* few, on slender pedicels, an inch long or less, one to two inches in diameter; sepals three to four, unequal, white, orbicular or the smaller ones oblong, entire or obscurely crenate; disc occupied by a minute green cone which is formed of connate petals enclosing some imperfect stamens. *Fertile flowers* very numerous; calyx-tube turbinate, limb obtusely five-lobed; petals connate into a deciduous cone; stamens fifteen to twenty, filaments long slender, anthers didymous. *Styles* two or three, very short, recurved, stigma obtuse. *Capsule* small, subglobose.—*J. D. H.*

Fig. 1, *Reduced* view of the whole plant; 2, fertile flower; 3, the connate petals; 4, stamens and styles; 5, anther; 6, ovary with three, and 7, with two styles; 8, petals and stamens of imperfect ray-flowers:—*all enlarged*.

M. Hanhel. J.N. Fitch. lith.

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TAB. 6789.

ALLIUM MACRANTHUM.

Native of the Eastern Himalayas.

Nat. Ord. LILIACEÆ.—Tribe ALLIEÆ.

Genus ALLIUM, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 802.)

ALLIUM (Rhiziridium) *macranthum*; rhizomate indistincte bulboso, fibris radicalibus pluribus carnosis, foliis linearibus acuminatis flaccidis glabris viridibus petalibus vel sesquipedalibus, caule valido tereti 2–3-pedali, umbella laxa multiflora pedicellis elongatis spathæ valvis ovatis cuspidatis pedicellis brevioribus, perianthio campanulato splendide purpureo segmentis oblongis obtusis valde imbricatis diu conniventibus, staminibus sæpissime inclusis antheris parvis oblongis filamentis subcylindricis conformibus, ovario globoso, stylo elongato exserto.

A. macranthum, *Baker in Journ. Bot.* 1874, p. 293; *Regel Allior. Monogr.* pp. 30 and 182.

This is a fine tall East Himalayan *Allium* belonging to the group in which the rootstock is scarcely at all bulbous. Before Mr. Elwes brought it home alive, it was known to us only by a single dried specimen gathered in 1848 by Sir J. D. Hooker. This was obtained in the Lachen valley in Sikkim, at an elevation of 13,000 feet above sea-level. Mr. Elwes gathered it in an excursion to the Chumbi valley, but he is not quite certain whether on the Tibetan or Sikkim side of the frontier. Amongst the European species its nearest affinity is with *A. pedemontanum*, Vill., and *A. insubricum*, Boiss. and Reut. What with its robust habit and very numerous flowers of bright mauve-purple, it is for horticultural purposes one of the finest of all the Alliums that have been brought into cultivation; and of course, coming from such an altitude, it is sure to be perfectly hardy. Our drawing was made from a plant that flowered with Mr. Elwes at Cirencester in July, 1883.

DESCR. *Rootstock* indistinctly bulbous, with a dense tuft of fleshy cylindrical root-fibres produced from its base. *Leaves* numerous, linear, thin in texture, a foot or a foot and a half long, tapering gradually from the base upwards

to a long point. *Scapes* several to a tuft, erect, terete, two or three feet long. *Flowers* fifty or more, arranged in a lax globose umbel three or four inches in diameter; pedicels reaching a length of one and a half or two inches; spathe-valves two or rarely three, ovate with a short cusp, shorter than the pedicels, remaining till the flowers are well developed. *Perianth* nearly half an inch long, remaining permanently campanulate, bright mauve-purple; segments oblong, obtuse, the three outer ones touching by their margins when the flower is at its fullest expansion. *Stamens* rarely protruded beyond the tip of the perianth-segments; anthers oblong, minute; filaments all similar and subcylindrical. *Ovary* globose; style finally half an inch long; stigma capitate.—*J. G. Baker*.

Fig. 1, The whole plant—*much reduced*; 2, rootstock—*life size*; 3, the pistil; 4, front view of anther; 5, back view of anther; 6, stamens and pistil:—*all four* ***more or less enlarged.***

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Tab. 6790.

SALVIA paniculata.

Native of South Africa.

Nat. Ord. Labiatæ.—Tribe Monardeæ.

Genus Salvia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1191.)

Salvia (Hymenosphace) *paniculata*; frutex erectus, robustus, scabridus, ramulis strictis teretibus, foliis breviter petiolatis obovatis acutis subdentatis coriaceis basi cuneatis utrinque scaberulis floralibus ovatis membranaceis deciduis, racemis paniculatim ramosis glanduloso-pubescentibus, verticillastris 2-floris distinctis, calyce breviter campanulato labiis subæqualibus superiore integro rotundato, inferiore 2-dentato, corolla cærulea calyce 3–4-plo longiore, tubo brevi, labio superiore falcato, inferiore æquilongo dilatato 3-lobo.

S. paniculata, *Linn. Mant.* pp. 25 and 511; *Ait. Hort. Kew.* ed. 2, vol. i. p. 63; ***Benth. in DC. Prodr.* vol. xii. p. 275.**

S. Chamæclæagnea, *Berg. Descr. Pl. Cap.* vol. i. p. 3.

S. minor, &c., *Breyn, Exot. Pl. Cent.* vol. i. p. 169, t. 85.

This belongs to a geographical section of the vast genus of Sages of which all inhabit South Africa, except *S. canariensis* (from the Canary Islands), and which is one of the few South African types which are indigenous in that interesting archipelago. Of this section twelve species are described by Bentham in De Candolle's "Prodromus," of which several were in cultivation early in the century, but most, if not all, have long since died out. Thus *S. paniculata* itself was introduced by Philip Miller in 1758, and as will be seen further on, long lingered in the Cambridge Botanical Gardens; *S. canariensis* so long ago as 1697, in the garden of the Duchess of Beaufort, and is figured by Trew. A most beautiful one is *S. aurea*, figured at Tab. 182 of this work (in 1792), with orange-yellow flowers an inch and a half in diameter, which turn a rusty brown; it was cultivated in 1731 by Miller, and grew to the size of a shrub six to seven feet high. In those early days of horticulture in England the Cape House was an attractive feature. This was when the plant-houses were heated with

hot air, and water being comparatively scarce, or brought from a distance only, overwatering was not the pernicious practice it is now where the plants of dry countries are grown.

For the reintroduction of this beautiful green-house plant we are indebted to Mr. Lynch of the Cambridge Botanical Gardens, an institution which, under his able management, is rapidly rising to eminence, as one of the very best in Europe.

S. paniculata inhabits sandy places in the districts of Worcester and Clan William, and has also been gathered on the eastern side of Table Mountain by Ecklon. At Cambridge it flowers in the open air in August. Mr. Lynch received it four years ago from the Botanical Gardens of Ghent, and the specimen figured was from one taken from it and planted against a wall. He informs me that there was an old plant of it in a decaying state in the Cambridge Gardens, but that cuttings from it had failed.

Descr. A leafy erect shrub six to seven feet high, with scabrid red-brown stem, rounded branches, and glandular-pubescent panicles of large pale lilac-blue flowers. *Leaves* one to two inches long, coriaceous, obovate, acute or obtuse, irregularly toothed, scabrid on both surfaces; base cuneate, narrowed into a short petiole. *Panicles* laxly many-flowered; flowers in distant pairs, shortly pedicelled. *Calyx* one-third of an inch long, subcampanulate, scabrid, two-lipped; upper lip rounded, lower two-toothed. *Corolla* pale purplish blue, four times as long as the calyx, tube short, wide, upper lip one to one and a half inch long, narrow, sickle-shaped, obtuse; lower nearly as long, dilated, with three broad retuse lobes. *Stamens* included under the upper lip, filaments very short, connective very long, with a linear anther at the long upper end, the short lower end dilated.—*J. D. H.*

Fig. 1, Section of flower; 2, anther; 3, filament and lower end of connective; 4, staminodes; 5, top of style and its arms:—*all enlarged.*

M.S. del. J.N.Fitch lith.

Vincent Brooks Day & Son Imp.

Tab. 6791.

DICHOTRICHUM TERNATEUM.

Native of the Moluccas.

Nat. Ord. Gesneraceæ.—Tribe Cyrtandreæ.

Genus Dichotrichum, *Reinw.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1014.)

Dichotrichum *ternateum:* suffrutex ramis radicantibus scandens, molliter pubescens, foliis oppositis paribus quam maxime inæqualibus, majoribus petiolatis oblique ovato-rotundatis subacutis irregulariter serrato-dentatis basi cordatis, minoribus parvulis auriculæformibus, pedunculo longissimo pendulo, floribus dense umbellatim corymbosis nutantibus assurgentibus coccineis, calyce subcampanulato 5-dentato, corollæ tubo curvo calyce triplo longiore, limbi lobis 5 oblongis obtusis tubo multo brevioribus, antheris exsertis, stigmatis lobis magnis rotundatis, capsulis longissimis.

D. ternateum, *Reinwdt. MSS. in De Vriese Tuinbouw-Flora*, vol. iii. p. 351, *cum ic.*; ***Morren, Belgique Horticole*, vol. xxi. p. 353, t. 22.**

Tromsdorffia? elongata, *Blume Bijdr.* p. 763; *Brown in Horsf. Pl. Jav. Rar.* p. 116.

Dichotrichum is a close ally of the beautiful genus *Æschynanthus*, differing from it very slightly in floral characters (the stigma and form of the bristles of the seed), but notably in habit, in which latter respect it is very near to the Javan monotypic genus *Agalmyla* (Plate 5747); which again differs in having only two perfect stamens, and a more regular corolla with included filaments. It is a plant of curious habit, climbing trunks of trees and moist rocks by the rootlets, which, as in the Ivy, are developed in great abundance all along those sides of the stem and branches which are adjacent to its supports. From these branches the long flowering peduncle depends, bearing a candelabra-like corymb of ascending flowers. The position of the peduncle and flowers is the opposite of that represented in both De Vriese's figure and in the "Belgique Horticole."

This fine plant is a native of the volcanic island of Ternate, one of the Moluccas, whence we have herbarium specimens collected by Mr. Moseley, one of the Naturalists of the "Challenger" Expedition. It was introduced by Jacob Makoy and Co., of Liège, from whom we received a

specimen in 1882, and it was figured in the "Belgique Horticole" of 1871.

The Kew plant was grown against a flat board in the Begonia House, and flowered in September.

Desc. A tall climbing undershrub, with soft thick herbaceous branches, all over softly pubescent; stem and branches rooting copiously into its supports. *Leaves* in rather distant and most unequal deep-green pairs; the larger four to eight inches long, petioled, broadly obliquely rounded-ovate, subacute, irregularly obtusely serrate, rather fleshy; base cordate with the two sides of the leaf appressed at the insertion of the petiole, which is one to four inches long, stout and terete; smaller leaf usually reduced to a green sessile auricle half an inch long or longer, appressed to the stem; but sometimes larger and petioled. *Peduncle* axillary, one to two feet long, pendulous, terete, brown. *Flowers* in an umbelliform corymb, crowded, pedicels half an inch long, ascending; bracts small, lanceolate, green. *Calyx* suberect, a third of an inch long, green, acutely five-toothed. *Corolla* one inch long, scarlet; tube curved outwards, with five small tufts of hairs beneath the stamens near the base within; limb nearly symmetrical; lobes oblong, tips rounded, two upper rather the longer and nearer together. *Stamens* four, inserted below the mouth of the corolla, filaments subequal slender; anthers oblong, brown, touching in pairs.—*J. D. H.*

Fig. 1, Calyx and style and stigma; 2, corolla laid open; 3, tuft of hairs from the base of the tube of the corolla; 5, anther; 6, section of ovary:—*all enlarged.*

3

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M.S. del, J.N. Fitch lith.

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TAB. 6792.

PLECTRANTHUS FŒTIDUS.

Native of Eastern Australia.

Nat. Ord. LABIATÆ.—Tribe OCIMOIDEÆ.

Genus PLECTRANTHUS, *L'her*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1175.)

PLECTRANTHUS (Isodon) *fœtidus;* elatus, robustus, dense villosus, caule crasso obscure 4-gono, foliis amplis petiolatis late ovatis subacutis grosse crenatis basi rotundatis v. truncatis, petiolo crasso, floralibus deciduis, spicis dense lanatis elongatis angustis inclinatis, verticillastris approximatis multifloris, floribus subsessilibus, calyce infra medium 5-fido lobis subæqualibus lanceolatis acuminatis, corolla pubescente, tubo brevi exserto decurvo, labio superiore brevi 2-lobo recurvo lateralibus minutis rotundatis, inferiore scaphæforme antheris exsertis.

P. fœtidus, *Benth. Lab.* p 35; *et in DC. Prodr.* vol. xii. p. 65 (Species in *Fl. Austral.* prætermissa).

OCIMUM fœtidum, *Banks MSS.*

This very striking plant was accidentally overlooked by Mr. Bentham when preparing the "Flora Australiensis," though it was published originally by himself in his "Genera et Species Labiatarum," and subsequently in De Candolle's "Prodromus." The fact is, that it is an exceedingly rare plant, and until the specimens here figured were received, it was known only from a single individual gathered by Sir Joseph Banks at Endeavour Bay in tropical Australia, during Capt. Cook's first voyage, and preserved in the British Museum Herbarium.

The genus *Plectranthus* contains nearly seventy species, all natives of the Old World, several of which are prominent features in Himalayan scenery. Several have been figured in this work, but none handsomer than *P. fœtidus*—*P. Forskahlii*, t. 2036; *P. carnosus*, t. 2318; *P. ternatus*, t. 2460; and *P. coleoides*, t. 5841.

P. fœtidus was so named from the odour of the plant when bruised, I assume, as it has no smell when fresh, and it is far from offensive when crushed.

DECEMBER 1ST, 1884.

It was raised at the Edinburgh Botanic Garden, whence specimens were sent to Kew in 1883. That from which this drawing was made formed a conspicuous feature in the Palm House during the spring months, from the great length of its racemose spikes with their snowy coat of wool enlivened by the beautiful cobalt-blue of the corolla. It is a fine introduction, and well worth cultivation.

Descr. *Stem* three to five feet high, robust, as thick as a swan's quill, obtusely four-angled, tomentose below, villous above. *Leaves* four to six inches long, broadly cordate, subacute, coarsely crenate, tomentose on both surfaces, rather fleshy, base truncate or rounded; petiole one to two inches long, robust, villous. *Inflorescence* a sparingly branched raceme two to three feet long of slender spikes clothed with thick white wool; whorls small, many-flowered, approximate; flowers shortly pedicelled. *Calyx* one-sixth of an inch long, villous, cleft below the middle into five lanceolate acuminate subequal teeth. *Corolla* cobalt-blue, pubescent; tube short, decurved; upper lip short, broad, two-lobed, reflexed, with two small rounded lateral lobes at its base; lower lip one-third of an inch long, boat-shaped. *Anthers* very shortly exserted at the end of the lower lip.—*J. D. H.*

Fig. 1, Upper part of the plant—*reduced;* 2, flower; 3, corolla and stamens; 4 and 5, anthers; 6, disk and ovary:—*all enlarged.*

INDEX

To Vol. XL. of the Third Series, or Vol. CX. of the whole Work.

6753 Abies religiosa.
6750 Acanthomintha ilicifolia.
6789 Allium macranthum.
6767 Begonia Beddomei.
6758 Begonia Lyncheana.
6770 Berberis congestifolia, *var.* hakeoides.
6768 Beschorneria Decosteriana.
6765 Caraguata sanguinea.
6774 Cereus paucispinus.
6781 Chrysanthemum cinerariæfolium.
6745 Citrus medica, *var.* acida.
6749 Coffea travancorensis.
6779 Corylopsis himalayana.
6783 Crinum leucophyllum.
6731 Decaisnea insignis.
6784 Dendrobium aduncum.
6746 Dichopogon strictus.
6791 Dichotrichum ternateum.
6763 Drymonia marmorata.
6739 Gladiolus Quartinianus.
6778 Hæmanthus Katherinæ.
6788 Hydrangea petiolaris.
6764 Hypericum empetrifolium.
6787 Iris hexagona.
6775 Iris (Xiphion) tingitana.
6742 Kniphofia foliosa.
6751 Labichea lanceolata.
6752 Leiophyllum buxifolium.
6733 Lotus peliorhynchus.
6740 Masdevalia Schlimii.
6760 Meconopsis Wallichii, *var.* fusco-purpurea.
6734 Morina Coulteriana.
6741 Notospartium Carmichæliæ.
6736 Nymphæa alba, *var.* rubra.
6771 Odontoglossum Edwardi.
6748 Oxalis articulata.
6738 Penstemon labrosus.
6777 Pentapterygium serpens.
6735 Phacelia campanularia.
6773 Philodendron Selloum.
6743 Picea ajanensis.
6785 Pinguicula hirtiflora.
6792 Plectranthus fœtidus.
6732 Primula prolifera.
6780 Pyrus (Cydonia) Maulei.
6776 Ravenea Hildebrandtii.
6769 Rhododendron multicolor.
6755 Sagittaria montevidensis.
6772 Salvia discolor.
6790 Salvia paniculata.
6766 Solanum Jamesii.
6756 Solanum Maglia.
6762 Steudnera colocasiæfolia.
6782 Streptocarpus Kirkii.
6737 Tilia petiolaris.
6757 Tillandsia streptophylla.
6744 Tinnea æthiopica, *var.* dentata.
6747 Torenia Fournieri.
6759 Trichocaulon piliferum.
6761 Tulipa Alberti.
6754 Tulipa Kesselringii.
6786 Tulipa primulina.